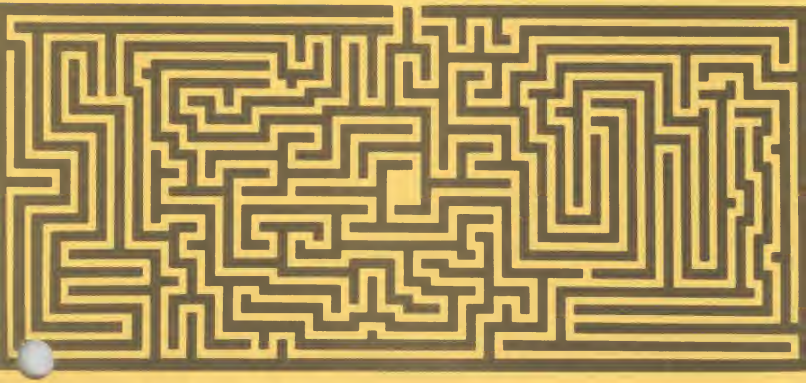
October 1977
No. 77-12
Health
Services
Administration

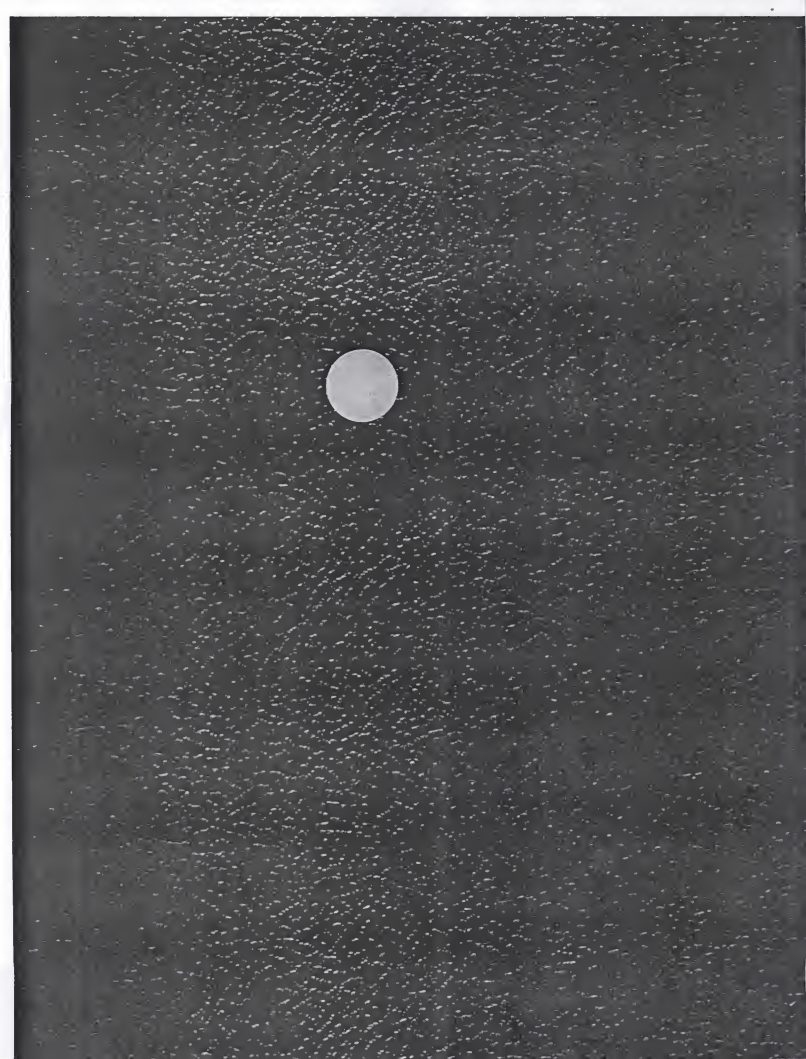
PSRO
17.21

PSRO:
An Evaluation of the Professional Standards Review Organization

VOLUME 7:
QUALITY IMPACTS:
INFERENCES FROM THE MEDICAL CARE EVALUATIONS



U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE • Public Health Service
Health Services Administration • Office of Planning, Evaluation, and Legislation



RA
399
.A3
P77
1977
v.7

VOLUME 7

QUALITY IMPACTS: INFERENCES FROM THE MEDICAL CARE EVALUATION STUDIES

PSRO: AN EVALUATION OF THE PROFESSIONAL STANDARDS REVIEW ORGANIZATION PROGRAM

October 1977

Report Number: OPEL 77-12

Office of Planning, Evaluation and Legislation
Health Services Administration

For the Government:

Jeffrey Perlman, M.D., HCFA
Gerald S. Adler - HSA/OPEL

For the Contractors:

Karen Orloff Kaplan, MSW, MPH - KAPPA Systems, Inc.
Robert A. Gold, M.Ed. - KAPPA Systems, Inc.
Wallace A. Mills, M.A. - KAPPA Systems, Inc.
Carolyn Lipp, A.R.T.- KAPPA Systems, Inc.

Contract Number: HSA 240-77-0074

Contract Cost: $66,140

TABLE OF CONTENTS

		Page
PREFACE		i
ACKNOWLEDGEMENTS		v.
PSRO EVALUATION REPORT VOLUME STRUCTURE		vi.
CHAPTER 1:	INTRODUCTION	1
1.1	Objectives of the Evaluation	1
1.2	Summary of Evaluation Findings	4
1.3	Organization of the Report	11
CHAPTER 2:	THE DEVELOPMENT OF MEDICAL CARE EVALUATION	13
2.1	The Development of the Medical Audit	13
2.2	Purpose of Medical Care Evaluation Studies	23
CHAPTER 3:	MCE PROGRAM ACTIVITY SUMMARY	38
3.1	Activity Report on the Medical Care Evaluation Component of the PSRO Program	38
3.2	Conclusions of Chapter III	59
CHAPTER 4:	ANALYSIS OF MCE RESULTS IN FOUR MAJOR TOPIC CATEGORIES	60
4.1	Introduction	60
4.2	Methodology for the Analysis of MCE Results	61
4.3	Results from MCEs Performed in the Topic Category: Myocardial Infarction	71
4.4	Results from MCEs Performed in the Topic Category: Pneumonia	80
4.5	Results from MCEs Performed in the Topic Category: Appendectomy	89

TABLE OF CONTENTS (CONT'D)

		Page
4.6	Results from MCEs Performed in the Topic Category: Cholecystectomy	98
4.7	Summary and Conclusions for Chapter 4	107
CHAPTER 5:	AN EVALUATION OF THE POTENTIAL IMPACT OF THE OVERALL MCE PROGRAM	117
5.1	Introduction	117
5.2	A Conceptual Framework for Evaluating PSRO Practices in MCE Topic Selection	119
5.3	Criterion 1: Chance of Finding and Removing Randomly or Systematically Distributed Problem Areas	123
5.4	Criterion 2: Situation Specific Factor Empiric Rating of PSRO Methods Used in Selecting Topics	143
5.5	Criterion 3: Topic Specificity Factor: Empiric Rating of Methods in Specifying Specific Topics	148
5.6	Relative Topic Category Probability of Containing MCEs with Impact	151
5.7	Follow-Up Procedures - Implementation of Follow-Up in the MCE Program	159
5.7.1	Assessment of Total Follow-Up Performed in a 10% Random Sample of MCEs	155
5.7.2	Overall MCE Reaudit Activity in the Nation	162
CHAPTER 6:	HOW HSQB PLANS TO EVALUATE THE IMPACT OF PSRO RETROSPECTIVE REVIEW ON MEDICAL CARE	173

PREFACE

This volume is a part of the evaluation of the Professional Standards Review Organization (PSRO) program conducted during fiscal years 1976 and 1977 by the Office of Planning, Evaluation & Legislation (OPEL) of the Health Services Administration, U.S. Public Health Service, Department of Health, Education, and Welfare. The emphasis of the evaluation was on program utilization control, quality assurance and cost-containment consequences and program costs. The evaluation was conducted at a time when the PSRO program was in an early stage of implementation. It indicates what impact the PSRO program had achieved by the start of 1977, provides baseline data for future evaluative work, and offers tests of numerous quality assurance and utilization control evaluation methodologies. Summarized below are the evaluation's salient findings.

The evaluation's primary study was an analysis of Medicare utilization data compiled expressly for this evaluation. The Medicare analysis investigated the effects of the PSRO program on hospital days of care per 1,000 enrollees, admissions per 1,000 enrollees and average length of stay. Eighteen active PSRO areas were compared to twenty-six

matched non-active PSRO areas. No aggregate PSRO effect was found on the utilization variables studied. This implies that as a "treatment" the PSRO program thus far has not impacted on Medicare utilization relative to other forms of utilization review being conducted in non-PSRO areas. While no overall utilization savings were found, individual experiences varied. Some of the organizations were associated with lower (favorable) utilization while others reflected higher (unfavorable) utilization than their matched comparison areas. These findings imply that, even though certain PSROs have demonstrated some degree of cost-effectiveness, the PSRO program as a national program is not now functioning as an effective cost-containment mechanism. Findings concerning appropriateness of care are inconclusive since both increases and decreases in utilization are consistent with heightened appropriateness of care.

An analysis of hospital discharge abstract data, primarily derived from the Commission on Professional and Hospital Activities (CPHA) Professional Activity Study (PAS) system, indicates that PSRO review tends to be associated with increases in case mix severity for Medicaid patients, but not for Medicare patients. The same data indicate smaller (unfavorable) decreases in case mix adjusted average length of stay (ALOS) for Medicaid patients in hospitals under PSRO review than in non-PSRO comparison hospitals and greater (favorable) decreases in ALOS for Medicare patients. It was also found that, in some instances, the proportion of longer stays in PSRO hospitals experienced a relative

decline. The ALOS findings, both favorable and unfavorable, were statistically significant yet rather small (on the order of 2%). The severity finding, while tentative for numerous methodological reasons, does suggest that PSROs may utilize bed days more efficiently.

Quality-oriented components of the PSRO program are just now being implemented. A study of a sample of medical care evaluation studies (MCEs) indicates that these studies were effective in identifying and correcting problems of medical care in hospitals. The number of initial audits reported has grown to over a thousand per quarter, but the number of reaudits reported is small. Choice of MCE topics is likely to effectively reveal problem areas but is not necessarily based upon a critical selection process. Profile analyses, which can aid in the focusing of both concurrent review (CR) and MCE studies, are implemented in only a few PSROs.

It was found that the estimated cost of a fully implemented acute care hospital PSRO program for Federal beneficiaries is $268.50 million. Associated Federal discharge unit costs are currently $18.31 for primarily delegated PSRO areas and $16.00 for primarily non-delegated PSRO areas. The PSRO program is more expensive than its predecessors. The cost of the original utilization review (UR) regulations was found to be $81.3 million while implementation of the revised UR regulations would have cost about $107.6 million.[1/] In order to "recover"

1/ Original UR cost figure adjusted to 1976 cost levels.

its costs the PSRO program would have to reduce utilization rates of covered populations by 1.6 to 2.05 percent.

The report cautions the reader against reaching final conclusions about the program since the evaluation was conducted during the time the program was in the developmental stage. However, data are sufficient to strongly suggest that continued PSRO implementation alone is not apt to cause significant changes in either hospital utilization rates or associated governmental expenditures.

Considerably more study is urged in several important areas as program development and implmentation is continued. Many issues have been identified in the course of the evaluation which should be of value in deciding on the direction of future work.

ACKNOWLEDGEMENTS

The valuable contributions of the following individuals are gratefully appreciated:

William I. Bauer, M.D.

Michael A. Freeman

Julie Bradshaw Sherrick

Susan Jones

Gayle Bauer

Margo E. Nusbaum

Velma M. Smith

Paul East, M.D.

PSRO EVALUATION REPORT VOLUME STRUCTURE

Volume 1:	Executive Summary
Volume 2:	A Context for PSRO Evaluation: The Program and Evaluation Precedents
Volume 3:	Acute Care Utilization Impact: Some Data on the Medicare Experience
Volume 4:	Acute Care Utilization Impact: Inferences from a Sample of Hospital Abstract Data
Volume 5:	A Comprehensive Case Study: The Colorado PSRO Experience
Volume 6:	Case Studies of PSROs: A Contextual Analysis
Volume 7:	PSRO Quality Impacts: Inferences from the Medical Care Evaluations
Volume 8:	The Costs of Utilization Review Programs in Hospitals and in PSROs
Volume 9:	Acute Care Utilization Review Costs Associated with the Medicare/Medicaid Programs
Volume 10:	Acute Care Utilization Review Costs: Synthesis of Components and Estimates for a Fully-Implemented Program
Volume 11:	A Cost-Benefit Context for PSRO Utilization Control Activities

1. INTRODUCTION

1.1 Objectives of the Evaluation

The Medical care evaluation (MCE) study is the primary mechanism of the recently established PSRO review system for assuring the quality of medical care delivered in institutions throughout the United States. Essentially, the MCE is an audit of patient care in terms of its efficiency, quality and efficacy. As the first major assessment of nationwide MCE activity scheduled by the Bureau of Quality Assurance, this evaluation deals with the overall level and distribution of MCEs performed to date, the extent of their compliance with Bureau policies and perhaps most importantly, their effectiveness in identifying and ultimately removing problem areas in patient care.

MCE audits assure or improve the quality of health care through a cyclical procedure based on a system of peer review. The MCE cycle involves those discrete operations each performed locally by practitioners whose own performance is being assessed. First, the initial audit, a practice which has been promoted for a number of years by organizations such as the Joint Commission on Accreditation of Hospitals and the American Hospital Association, is completed. Secondly, follow-up procedures consisting of appropriate educational or administrative

interventions, are applied where deficiencies in medical care have been found. This new role has been included into the definition of peer review within the past four years by the Bureau of Quality Assurance (BQA). The last operation of the cycle is the reaudit, which serves to demonstrate improvement in the deficient situation after intervention. Thus, MCEs have been designed to ensure that problem areas are not only identified but are also removed. This evaluation examines MCEs at all three stages of the cyclical process so as to closely assess their total impact on medical care in the United States today as well as to provide a basis for projecting their potential impact in the future.

This evaluation report has been divided into three major sections. Section 1 is a status report on the overall level and distribution of MCE activity throughout the PSRO system. In it, both the numbers and types of MCEs performed across the country are summarized. Section 2 examines the actual building blocks of the MCE program by looking in detail at all audit and reaudit cycles in four major areas of medicine and surgery. These studies are assessed by rating systems in terms of the thoroughness with which they were completed, as well as in terms of the impact they succeeded in having upon medical care. Finally, Section 3 of the report deals with the entire universe of MCEs by looking at two important aspects of the process, topic selection and follow-up procedures. Both of these areas relate very directly to the identification and correction of problem areas in medical care delivered to patients.

Only if topics are chosen rigorously is it possible to expect that major problem areas will be highlighted. Similarly, it is likely that these problems will be corrected only if follow-up actions are completely carried out. Based on the analysis of topic selection and follow-up, some conclusions can be drawn as to whether the MCE program actually has the potential to produce results.

Despite the fact that the first audits were completed in the early 1970s, this is the first major evaluation of their quality and potential impact. One of the evaluation's significant products has been the development of techniques for the assessment of MCEs now as well as in the future. Since the data used in this evaluation are limited to only two years of activity, and since that activity was concentrated towards the end of the time period, portions of the evaluation may have been performed prematurely. Nevertheless, methodology now exists for continuing the assessment of MCEs. The Health Standards and Quality Bureau (HSQB) as successor to BQA will continue the role of evaluator for subsequent examinations of the program by reapplying these methodologies to later samples of MCEs in 1978. The primary thrust of future evaluations will be to measure directly the impact of medical audit on patient care and outcome. Some considerations relevant to implementing a long-term evaluation of the MCE audit/reaudit cycle have been discussed in the last chapter of this report.

1.2 Summary of Evaluation Findings

An intent of the PSRO legislation is to ensure that health care is provided to the recipients of Title V, Title XVIII, and Title XIX program services at an acceptable level of quality. The aspect of the PSRO program which especially concentrates on the quality of care is the Medical Care Evaluation (MCE) study component. This subsection summarizes report findings on MCEs.

Medical audits, the primary part of the MCE process, are not unique to the PSRO program. They have a precedent in hospital activities performed in response to requirements of the Joint Commission on Accreditation of Hospitals (JCAH). They were also mandated by a section of the original (1966) Medicare regulations. The significant contributions of the PSRO program have been to make the PSRO responsible for seeing that these evaluations are carried out and more importantly to require that the effectiveness of action to correct deficiencies in care found in the initial audit be confirmed by a follow-up evaluation, or reaudit.

Most PSROs have implemented MCEs after the time work was started on concurrent review. In general, this has been about one year after the PSRO achieved conditional status. When the PSRO evaluation was in its formative stages little information about MCE activities was available. As the study progressed, however, it became evident that reliable MCE data were becoming more abundant, and a joint effort was begun by the Health Standards and Quality Bureau, HCFA (previously the Bureau of Quality Assurance) and OPEL to evaluate the program's MCE activities.

The examination of MCE study activities was based on three strategies: (a) to provide a status report on the overall level and distribution of MCE activity, (b) to determine the effectiveness of the MCE process--defined as changes of significance in medical care process and/or patient outcomes--by examining the results of a sample of completed MCEs in four topic categories judged to have high impact potential, and (c) to assess national MCE activity as a whole by examining topic selection and follow-up procedures among the universe of studies reported as of June 1, 1977.

Evaluation was made possible by the existence of the PSRO Management Information System (PMIS), through which reports of completed audits and reaudits become available for analysis. Lags in the data processing system, however, can result in a delay of up to seven months from the time a MCE is completed to the time it is included in the data base. Thus, the number of MCEs reported, especially for the more recent quarters, tends to be underestimated.[1/] However, for the purpose of this review, it has been assumed that the studies reported in the data base fairly represent the areas of medical care in which studies have been done.

MCE Status Report

Data available through the PMIS show that PSRO medical care evaluation activity is rapidly accelerating across the country. While

1/ The data base available for these analyses as of June 1, 1977, for example, included 367 initial audits reported for 1975, 2,517 for 1976 and 20 for the first quarter of 1977. As of August 15, 1977, these figures were 392, 3,467, and 1,342 respectively.

only a few hundred audits were reported for 1975, several thousand MCE studies were reported for 1976, and the quarterly figures for 1977 are still rising. Progress in MCE implementation is not uniform, however. Of the 56 PSROs reporting MCEs in calendar years 1975 and 1976, ten accounted for 45% of the total studies. Slightly more than 45% of the audits were done on medical topics and about the same proportion on surgical topics, with the remaining 9% focusing on administrative and miscellaneous procedures. When the audit topics were classified into 305 topic categories, the 20 most frequent topic categories accounted for over half of the studies done. Myocardial infarction, pneumonia, cholecystectomy, and appendectomy were the four most frequently audited topic categories. The data suggest that the predominance of the top twenty topic categories is lessening over time, but tests of rank correlation show that the trend is not statistically significant thus far.

No attempt was made to evaluate the compliance of hospitals or PSROs with requirements that a minimum number of initial MCEs be submitted each year. Since this requirement was issued in January 1977, compliance cannot be assessed before March 1978.

Assessment of a Sample of Completed MCEs

The second protocol of the MCE evaluation examined studies which had completed the audit/reaudit cycle. Due to lags in the reporting system and the fact that reaudits need not be completed until a year after the initial audit, the number of such studies represented

in the PMIS data base is small. Of the 132 completed studies reported in the PMIS and others solicited in a canvas of the PSROs, 37 in the four most frequently reported topic categories were selected for analysis. Documentation for these studies was solicited from the hospitals through the PSROs.

The evaluation questions asked of these studies were: Was the study process done well? Were deficiencies in medical care identified? Was action taken to correct these deficiencies? Was improvement in care demonstrated in terms of reduced numbers of deficiencies found at the time of the reaudit?

Taken in total, most (95%) of the MCE studies examined were judged to have followed acceptable research procedures. Whether or not such procedures were acceptable, each of the MCE studies examined identified significant deficiencies and most reduced the rate of variation from criteria by the time of reaudit. The deficiencies seem to fall into six major problem areas. These include failure to complete routine admission procedures and work-up, failure to follow accepted diagnostic procedures, failure to provide adequate disease-specific treatment, inappropriate utilization, unjustified patient outcomes, and failure to adequately document patient progress.

When analysis is performed on complete audit and reaudit combinations, the MCE appears to be an effective tool for the discovery and resolution of problems. Good results were produced from most medical audits whether or not their process was optimal. Problem areas were identified

in both the process of care and patient outcome. A significant finding of the study is that among the MCEs in this sample, 68% of all deficiencies found after initial audits were removed by the time of reaudit.

Assessment of MCE Topic Selection and Follow-Up

Although overall impact assessment of MCEs is premature due to the small number of reaudits reported at this time, two necessary conditions for overall program impact can, however, be examined among the vast majority of studies which have been reported only through the initial audit: whether MCE topics being chosen have the potential to identify important problem areas and whether action is being taken to remove problems once they are identified.

Present PSRO practices in choosing topics are consistent with the goal of identifying problem areas in medical care and patient outcome. The degree of implementation of follow-up procedures also appears at this time to be consistent with the goal of removing these problem areas. In selecting medical topics, PSROs tend to choose diseases which are the chief causes of death in the country, except for carcinoma. The surgical procedures which are most frequently carried out in this country, except those relating to trauma, tend to be the most frequently selected surgical topic categories. By choosing these frequent diseases and procedures, which encompass many patients, physicians, and ancillary services, the program has a reasonable chance of effectively uncovering problem areas at this time.

Aside from the fact that topics are chosen because they are nationally common reasons for hospital admission, there seems to be no other strong rationale at this point for choosing MCE topics. There is insufficient evidence that topics are chosen to address perceived problems in care at the hospital level, or that the topics selected on the whole are adequately focused. There appears to be a bias in favor of choosing acute, rather than chronic conditions for examination. While the present PSRO practices for topic selection are consistent with the discovery of problem areas, the practices will have to be refined in the future to permit the continued selection of high-impact topics and to ensure that biases in the selection process do not leave areas of medical care unexamined. Such refinement would include: (a) greater emphasis on immediate, perceived problems in care in selection of topics and (b) making topics chosen more focused and specific.

Based on the analysis of 2,876 audits, deficiencies in the process of care are found in almost 70% of MCEs. The data indicate that almost all of the audits which detect such problems recommend corrective action. A review of a 10% random sample of studies begun in 1975 shows that most recommendations are implemented. Thus, though the program has no routine way of monitoring the implementation of corrective action, the fragmentary information available indicates that the frequency of such action is consistent with the widespread removal of problem areas in medical care. Not all initial audits which reveal deficiencies in care call for reaudits; in this sample only 43.5% of all

initial audits required them. Only 132 of these reaudits have, however, been reported as complete. Thus, PSROs are not getting feedback on the work of their recommended actions. In order that the changes brought about in the quality of care can be assessed, reaudits will have to be carried out with greater regularity.

Profile Analysis and MCEs

The analysis of computer profiles which aggregate unit-record patient data in order that patterns of care can be observed may become a powerful tool for the improvement of the health care system. As envisioned in the design of the PSRO program, profile analysis is a key component, guiding both concurrent review and medical care evaluation by pointing out problems of high priority. As the PSRO program has been implemented, however, profile analysis has been the last component to be put in place. The implementation of profile analysis is a complex task. Not only must a profile system be designed, but arrangements must be made to carry out the practical details of abstracting and processing the data. To date, few PSROs have operational profiling systems.

Profiling can be especially significant to the development of the MCE component of the program. Properly applied, profile analysis can provide assistance to PSRO physicians by objectively identifying problems in their own hospitals and problems on a larger scale which might otherwise be unapparent. Where such systems exist they have generated topics for both areawide and individual hospital MCE studies.

PSROs and the Quality of Care

This evaluation has established that the MCE process, as implemented by PSROs and delegated hospitals, is an effective tool to detect and remedy problems in medical care in particular settings. It is another question, and one which this evaluation has only begun to address, whether the MCE program effectively fulfills the legal mandate to maintain the quality of the care provided to Federal beneficiaries. The study found that the growth in MCE implementation and the types of areas of medical care selected for study are both consonant with this goal, but the present study is not adequate to assess the quality of health care on a national scale. To do so will require the development of measures and an appropriate experimental design.

1.3 Organization of the Report

This report is divided into six chapters. The first two chapters provide introductory material as well as a short history of the medical audit emphasizing the development of the MCE component of the PSRO program and its current status. The following three chapters constitute the main body of the report, and reflect the analysis and summary of all the data collected and examined during the evaluation procedure. These three chapters and, hence, the evaluation plan itself are outlined below. The final chapter discusses considerations for further MCE evaluations.

OUTLINE OF EVALUATION PLAN

I. (CHAPTER 3) ACTIVITY IN MCE PROGRAM BY:

A. Numbers of Audits
B. Categories of Topics
C. Types of Categories
(medical, surgical and administrative)
D. Distribution of Activity
E. Compliance
F. Conclusions as to:

1) level and type of activity
2) level of compliance

II. (CHAPTER 4) EVALUATION OF A SAMPLE OF MCEs IN FOUR MAJOR TOPIC CATEGORIES:

A. Rating of Individual MCE Studies According to:

1) Process
2) Impact

B. Assessment of Each of the Four Categories in Terms of:

1) The type of deficiencies found
2) The success of MCEs in that category in diminishing or eliminating problem areas

III. (CHAPTER 5) RESULTS EXPECTED IN THE WHOLE UNIVERSE OF MCE ACTIVITY ON THE BASIS OF:

A. Quality of Topic Selection with the Following Criteria:

1) Scope of topic category
2) Topic specificity
3) Situation specific needs

B. Follow-up

1) Implementation of recommended actions
2) Performance of reaudits

2.1 THE DEVELOPMENT OF THE MEDICAL AUDIT

The medical care evaluation component of the PSRO program is not a new invention, but rather is a product of the evolution in this century of both the technique of the medical audit and of professional and social concern regarding the need to systematically monitor and improve the quality of hospital care. This section will review these parallel developments.

Bringing American Medicine into the Twentieth Century.

It is difficult to comprehend the recency of the changes which have brought the American health care system to its present state of technological and organizational sophistication. Lembcke reminds us of the situation of medical education in the era immediately preceding Abraham Flexner's renowned report to the Carnegie Foundation:

> In the period between 1900 and 1909, some 165 medical schools had been turning out 5,200 doctors annually, a majority of whom had not even a high school education before taking 24 to 30 months of medical "education" that often consisted largely of lectures and cramming for examinations, with little or no laboratory and clinical work worthy of the name.(1)

Flexner's tudy of medical education, published in 1910, was a symptom of the concern of the leaders of the

medical profession about the quality of medical care. The Flexner report also was a stimulus to the medical profession to improve the quality of care. The movement to reform medical education was joined during the decade of 1910-1920 by a drive to raise the standards of hospital care, particularly on the part of the Clinical Congress of Surgeons of North America (soon to be succeeded by the American College of Surgeons).

The Clinical Congress of Surgeons advocated a nationwide survey of hospitals along the lines of Flexner's study, judging the performance of each hospital individually according to objective criteria of performance, based on a systematic analysis of case records. In this they were following the example of a key figure, Dr. Emory Codman, who had founded his own hospital and in it instituted the pioneer "end result" medical audit system:

> Codman described his forms and method; and also published an abstract of every case admitted to his hospital in the years 1912 through 1916, classifying the results as favorable or unfavorable, and assigning responsibility for the latter to errors in diagnostic and technical ability, poor surgical judgment, inadequate care or equipment, and the type of disease or the patient's refusal of treatment. Codman's system required also at least one reevaluation of the case a year or more later, until a condition of stability permitting final judgment had been reached.(2)

Codman's system was not adopted by any other hospitals at the time, and indeed he himself had to abandon it when he rejoined Massachusetts General Hospital. Yet his position as head of the Committee on Hospital Standardization of the CCSNA was influential in persuading the Carnegie Foundation in 1916 to sponsor a survey of hospitals with over

100 beds in the United States and Canada. Under the direction of Dr. J. G. Bowman of the American College of Surgeons, the study applied objective criteria to salient points of diagnosis, treatment, and outcomes in 692 hospitals. The criteria employed and the findings in the hospitals surveyed were never published nor have they been preserved. It is known that only 89 of the 692 hospitals could meet any reasonable standards, and it is likely that the findings were so shocking that the survey committee ordered the individual survey reports destroyed forthwith. (3,4)

The Retreat to Structural Criteria of Care and the Founding of the JCAH

The American College of Surgeons continued its Hospital Standardization program from 1918 to 1952, but replaced its concern with the process and outcome of care with minimal structural standards for hospital organization, staffing, facilities, procedures, and graduate training. There can be no doubt that this long-range program to improve quality of care by less direct methods had a salutory effect, but as Lembcke points out, adequacy of structure does not guarantee quality of care:

> There can be no reasonable doubt that a hospital complying in spirit as well as form with the principles of "hospital standardization" . . . will furnish medical care of good quality. Faithfully construed, the principles required a staff of thoroughly trained physicians, supplied with adequate facilities, working within the limits of their professional competence, following generally accepted procedures, being advised by their colleagues in serious or doubtful cases, and undergoing professional scrutiny of their performance

> through regular review of the medical records of their cases. Yet it is possible for such generally phrased standards to be met in a superficial manner that may gain "approval" but does not necessarily guarantee medical care of good quality. This is so because compliance may exist in widely varying degrees, and because such standards as those concerning staff organization or completeness of medical records are not related directly to patient care as the clinician sees it, but even more so because the criteria for performance are not explicit. (5)

The passage of the Hospital Survey and Construction Act of 1946 (Hill-Burton) was in some ways the culmination of the decades of Hospital Standardization review, for the law required that every state receiving subsidies have a hospital licensure law. At that time, only ten of the forty-eight states had such laws. Many of the ACS criteria were embodied in the federal model statute and crystallized into state law.

In 1952, a wider organizational base for accreditation and review was achieved through the formation of the Joint Commission for Accreditation of Hospitals (JCAH) by the American College of Surgeons, the American College of Physicians, the American Medical Association, and the American Hospital Association. The Joint Commission not only had a wider base of legitimation for its criteria and standards, but also a larger field staff. In the beginning it adopted the same standards as the ACS, but has extended them over the twenty-five years of its influence.

One significant addition was the specification of what Roemer and Friedman call "control committees" in the medical staff. The ACS standards had stipulated that "the medical staff review and analyze at regular intervals their clinical experience" on the basis of patient

records, but had specified no mechanisms for carrying out such review. The JCAH established as a requirement for accreditation that there be a medical records committee and a tissue committee. These requirements have since expanded to include infections, pharmacy and utilization review committees, among others.(6) Lembcke maintains, further, that the prospect of a thorough external audit of care has tended to encourage hospitals to use these control committees as effective internal auditors.(7)

Federal Involvement. Until the passage of the Medicare and Medicaid Amendments of 1965, the story of peer review was for the most part one of voluntary self-regulation of professionals and hospitals, through their own associations. With the advent of Federal funding, the interests of the government and the taxpayers, as well as the recipients of care, in the efficiency and efficacy of the care provided have become bases for government regulation. Without question, the professions retain major influence on the content of legislation and regulations, but the impact of the concerns of the public and its representatives with cost and quality can easily be seen in such forums as the Senate Finance Committee hearings which preceded the passage of the PSRO legislation.(8)

The Conditions for Participation of Hospitals pursuant to the 1965 Medicare law (P.L. 89-97) specified more stringent standards than were at that time required by the JCAH.(9) The regulations also contained language which mandated, but did not specifically require, medical audits:

(f) Standard; Reviews. - (1) Reviews are made, on a sample or other basis, of admissions, duration of stays, and professional services furnished, with respect to the medical necessity of the services, and for the purpose of promoting the most efficient use of available health facilities and services. Such reviews emphasize identification and analysis of patterns of patient care in order to maintain consistent high quality. The review is accomplished by considering data obtained by any one or any combination of the following:

(i) By use of services and facilities of external organizations which compile statistics, design profiles, and produce other comparative data; or

(iii) By internal studies of medical records.(10)

It was expected that hospitals would respond to the flexibility allowed in the regulations by developing innovative plans for meeting the requirements. This was, however, not to be. The lack of specificity in the regulation, as well as the fact that failure to carry out reviews was not a sufficient cause to bar a hospital from Medicare participation (the "substantial compliance" doctrine), meant that medical audits were not likely to be carried out except, perhaps, in the best hospitals.

The 1972 amendments to the Social Security Act (P.L. 92-603) contained, among other provisions, sections establishing the PSRO program and revising utilization review requirements for participation in Medicare and Medicaid. The purposes of the UR revisions were: a) to make review procedures more objective, efficient, and comprehensive; b) to require the same types of review under both Medicare and Medicaid; and c) to establish review procedures compatible with the PSRO program.

The regulations published in 1974 pursuant to P.L. 92-603 specified the procedures of medical audit and formally introduced the term "medical care evaluation studies."(11)

> (j) Standard: Medical care evaluation studies. Medical care evaluation studies are performed to promote the most effective and efficient use of available health facilities and services consistent with patient needs and professionally recognized standards of health care. Studies emphasize identification and analysis of patterns of patient care, and suggest possible changes for maintaining consistently high quality patient care and effective and efficient use of services. Each medical care evaluation study (whether medical or administrative in emphasis) identifies and analyzes factors related to the patient care rendered in the facility, and where indicated, results in recommendations for change beneficial to patients, staff, the facility, and the community. Studies on a sample or other basis must include, but need not be limited to: admissions, durations of stay, ancillary services furnished (including drugs and biologicals), and professional services performed on the hospital premises. At least one study must be in progress at any given time, and at least one study must be completed each year. The study will be accomplished by considering and analyzing data obtained from any one or a combination of the following sources.
>
> (1) Medical records or other appropriate hospital data;
>
> (2) External organizations which compile statistics, design profiles, and produce other comparative data; and
>
> (3) By cooperative endeavor with the PSRO, fiscal intermediary(ies), providers of services or other appropriate agencies.
>
> The group or committee shall document the results of each medical care evaluation study and how such results have, where appropriate, been used to institute changes to improve the quality of care and promote more effective and efficient use of facilities and services. (12)

Aspects of these regulations — though not the MCE section — were challenged in court by the American Medical Association, so that these rules were not implemented as planned. They constitute, however, the most recent legal basis for the MCE program. As PSROs are granted conditional authority, they assume on a hospital by hospital basis the responsibility to carry out MCEs or to delegate this function to the hospital.

A more advanced version of the regulations was proposed in 1976, but thus far has not been adopted. It is included here to show the latest thinking of the Department:

(5) Medical Care Evaluation Studies.

(i) The medical staff shall be responsible for the performance of medical care evaluation studies to promote the most effective and efficient use of available health facilities and services consistent with patient needs and professional recognized standards of health care.

(ii) The studies shall emphasize identification and analysis of patterns of patient care, and recommend appropriate changes for maintaining consistently high patient care and effective and efficient use of services.

(iii) Each medical care evaluation study shall be designed by the physician members of the committee and shall utilize criteria and standards established by those members. The studies may relate to admission, duration of stay, ancillary services (including the furnishing of drugs and biologicals) and professional services performed on hospital premises. The studies may be directed to the process or outcome of patient care or to the organizational and administrative arrangements for providing such care.

(iv) The committee shall analyze the finding of each study and make written recommendations, where

appropriate, for corrective actions in the organization and administration of health care delivery in order to improve the quality of care, promote more effective and efficient utilization of facilities and services, or to make changes beneficial to patients, staff, the facility and the community.

(v) At least one study shall be in progress at any given time and at least one study must be completed each year. These studies may utilize data and information derived from the records of the institution; statistics, profiles and comparative data on hospital utilization compiled by other organizations and reports and other information obtained from fiscal intermediaries, providers of services or other agencies.

(vi) The committee shall document the results of each medical care evaluation study and how such results have been used to institute changes in the methods of care and to promote more effective and efficient use of facilities and services.(13)

At the same time that MCEs became a legal requirement for Medicare and Medicaid participation, the Joint Commission (JCAH) established them as a standard for hospital accreditation.(14) As of July 1, 1975, any hospital surveyed by the JCAH had to display two completed MCEs of acceptable quality and two in progress. This number was changed in 1976 to be proportionate to hospital size, ranging from 4 to 12 per hospital each year. The same numerical requirement was adopted by the PSRO program in January of 1977. PSRO and JCAH requirements for MCEs are being made increasingly compatible in numbers, process, and topics, so that MCEs are receiving coordinated support as tools for improving quality of care.

Conclusions. This section has attempted to portray the historical basis for the development of the MCE component of the PSRO program. The movement to reform medicine from within at the beginning of the century gave birth to the medical audit. The concern with cost and quality in the 1960s and 1970s gave it new importance. The contribution of MCEs to improvement of hospital care is the subject of this volume.

Notes.

1. Lembcke, Paul A. "Evolution of the Medical Audit," JAMA 199 (Feb. 20, 1967): 111-118.
2. Ibid., p. 112.
3. Ibid., p. 113.
4. Lewis, Charles E. "The State of the Art of Quality Assessment - 1973" Medical Care XII (October 1974): 799-806.
5. Lembcke, Paul A., op.cit., p. 114.
6. Roemer, Milton I., and Jay W. Friedman, Doctors in Hospitals (Baltimore: The Johns Hopkins Press, 1971), pp. 40-41.
7. Lembcke, Paul A., op.cit. p. 114.
8. United States Senate Committee on Finance, Report 92-1230, September 26, 1972.
9. Joint Commission on Accreditation of Hospitals, Accreditation Manual for Hospitals, 1970, Updated 1973 (Chicago: JCAH, 1971, 1973).
10. Federal Register, Volume 31, p. 13424, October 18, 1966.
11. The term appears first in Goldberg, George A. et al., "Medical Care Evaluation Studies," JAMA 220 (April 17, 1972): 383-387.

12. Federal Register, Vol. 39 No. 231, p. 41607, 41613, Nov. 29, 1974.

13. Federal Register, Vol. 41 No. 62, p. 13456, March 30, 1976.

14. Joint Commission on Accreditation of Hospitals, Accreditation Manual for Hospitals 1976 (Chicago: JCAH, 1976), pp. 27-29, 109-111.

2.2 Purpose of Medical Care Evaluation Studies

The Medical Care Evaluation (MCE) study begins with a medical audit whose purpose is twofold. First, the audit assesses the quality and efficiency of services rendered by physicians, other health care practitioners and ancillary staff in hospitals and other institutions. Secondly, it documents patterns of patient outcomes; i.e., the status of patient health after the intervention of medical care. The MCE methodology established to accomplish these purposes is actually a flexible set of requirements. These requirements will be discussed in detail at a later point. It should be noted now, however, that this methodology relies on the development of criteria. These criteria objectively and rigorously describe local expectations of how patients should be admitted, diagnosed, treated, and released from institutions. PSROs then test these cirteria against medical records (such as patient charts). The notation of the presence or absence of these criteria in these charts serves as the data upon which judgments are made as to the quality and efficiency of the process and outcomes of medical care. If variations are noted with respect to the

criteria, the PSRO may identify deficiencies in the medical care process and/or patient outcomes. Local medical staffs are then responsible for eliminating these deficiencies by suggesting and implementing corrective actions such as modifying practioner behavior through mass continuing medical educational programs, counseling individual practitioners, or altering facility policies. Although these steps are executed in most types of medical audit, the MCE methodology is distinguished by the feedback loop which is designed to insure that the actions recommended in the initial audit are actually carried out. Through a series of follow-up steps including reaudit, MCEs assess the extent to which there is actual improvement in medical care or in patient outcomes after the corrective actions have been taken.

The methodology of the MCE is similar to the explicit process approach described by Brook in 1973. The explicit process[1] approach primarily analyzes the process of medical care; i.e., the way in which patients are handled in institutions. Yet, MCEs attempt to go deeper in their analysis of medical care by assessing patient health status at the time of discharge. To do this, outcome criteria are developed which establish standards for discharge against which actual patient health status is measured. The use by PSROs of both the explicit process and outcome approach will undoubtedly continue as physician involvement, particularly in setting criteria, is requisite in these approaches. The involvement by those actually responsible for providing medical care is a primary way in which appropriate action to improve medical care

process and patient outcomes can be assured.

Because of difficulties in using techniques such as explicit group outcome estimations,[3] health status indexes have not been incorporated into the MCE procedure. Basically, "a major problem in the development of a health index is a lack of a conceptual definition of health capable of being translated into operational terms."[4] Thus, not all aspects of medical care are presently being studied by MCEs. The attempt has been made to broadly define medical care as the application of physician and other health care practitioner services, as well as ancillary services to patients for the purpose of improving health status. The favorable application of medical care results in positive patient outcome.

Donabedian[5] states that good medical care has the following foud major characteristics:

Efficiency
Quality
Continuity
Accessibility

He breaks down the characteristic of "Quality" into the areas of professional competence, qualitative adequacy in medical knowledge or surgical skill, and patient acceptance of the care rendered. Of these three areas, MCEs have primarily concentrated on assessing the knowledge, skills, and competence of practitioners in the hospital. Also, they have attempted to evaluate the necessity and efficiency of admissions to those hospitals. Thus, in addition to their assessment of patient

outcomes discussed earlier, MCEs have focused primarily on the efficiency and quality (minus the area of patient acceptance of care rendered) aspects of good medical care in hospitals. It is apparent, then, that the assessment of the continuity and accessibility of medical care are not yet a part of PSRO MCE activity. This is true primarily because of the fact that MCE activity has followed the implementation of PSRO review, which has been mostly of acute care facilities.

Continuity and accessibility of care are concepts which go beyond the inpatient taking on a greater importance for the ambulant and/or chronically ill. While these two concepts have not been given any significant amount of attention by MCEs to date, demonstration projects in ambulatory and long-term care facilities are now concentrating more on these characteristics of good health care. For the purpose of this report, however, MCEs will be evaluated for their ability to improve assessable medical care as defined by Roemer.[6] His characterization of medical care is that hospital care which is actually delivered as opposed to all forms of health care theoretically available. It should be no surprise, then, that MCEs now serve primarily to identify problem areas in medicine, surgery, and hospital administration as they exist in hospitals. Future evaluations of MCEs will include the analysis of MCE activity in all areas of health care.

Results of MCEs

Some final definitions are in order. The initial audit of the MCE identifies patterns of medical care and patient outcomes. When these patterns are compared to written criteria, deficiencies in medical

care or patient outcomes may be noted. One or several deficiencies may exist in problem areas[7] which could occur across several diagnostic categories. These problem areas increase in importance as they affect a greater number of patients and practitioners, and cause higher capital outlays. The results of the initial audit are reflected by the following categories:

Number of deficiencies found in medical care
Number of deficiencies found in patient outcomes
Number of problem areas revealed in medical care and patient outcomes
Description of deficiencies
Description of problem areas
Significance of deficiencies
Importance of the problem areas
Type of recommended actions suggested
Number of recommended actions made

The proximate results of the MCE are determined after the reaudit is complete and its results are compared to the results of the initial audit. The proximate results appear in the following categories:

Number of deficiencies eliminated in medical care
Number of deficiencies removed in patient outcomes
Number of problem areas eliminated in medical care
Number of problem areas eliminated in patient outcomes
Significance of removing deficiencies
Significance of removing problem areas
Number of recommendations implemented by the time of reaudit

The existence of proximate results indicates whether or not the audit/follow-up/reaudit cycle has been immediately successful in improving medical care or patient outcomes. If it has improved medical care or patient outcomes, then the MCE had impact. Only when the benefits of the changes are analyzed according to more long-term parameters such as improvement in patient health status, improvement in the health status

of the population, or improvement in the costs or efficiency of medical care, however, can the final results of the MCE be truly described and assessed for their value.

The Role of BQA in Medical Care Evaluation Studies

BQA has been responsible for organizing PSROs from groups of physicians across the entire country. It has been the responsibility of the Bureau to encourage these PSROs to begin retrospective reveiw as soon as it became possible. To do this, the Bureau has attempted to develop and encourage MCE compliance. It has also offered technical assistance in relation to the completion of MCEs to PSRO staff in order to facilitate the implementation of MCE review. Finally, it has been the responsibility of the Bureau to evaluate the success with which the program is implemented and the utility of the entire MCE program.

To establish the MCE policy, BQA issued the first draft of the MCE Transmittal (PSRO Transmittal No. 43) in July of 1976. The transmittal defined the MCE and set forth the requirements to be met in its completion. In addition, it stated the overall requirements a PSRO was asked to meet in establishing a regional MCE program. The relative roles of the hospitals and the PSRO in meeting these requirements were included in the Transmittal and it was approved by the National Professional Review Council in January of 1977 with issuance being final on January 25, 1977.

The following is the definition of a medical care evaluation (MCE) study as set forth in the Transmittal:

Definition

Medical Care evaluation (MCE) studies are a form of health care review in which an in-depth assessment is made of the quality of the delivery and organization of health care services. They are designed to assure that 1) health care services are appropriate to the patient's needs and are of optimal quality and 2) health care organization and administration support the timely provision of quality care. By systematically and objectively documenting patterns of health care, studies should be capable of identifying deficiencies in the quality of that care so that where they exist, specific improvement programs may be directed at the causes of the deficiencies. Study data may be collected either retrospectively or concurrently, but data analysis is always performed retrospectively.

MCE studies are not clinical trials or clinical research. Their purpose is to evaluate current local health care practices to determine if they meet current optimal achievable professional standards of acceptability. A successful MCE study does not set out to expand medical knowledge, although expansion of knowledge may well be a by-product of the study. Rather, the primary goal of the MCE process is to cause improvement in care by assuring that currently generally accepted or proven measures are being optimally utilized by health care practitioners and providers, given the local resources available.

The Transmittal, in defining the Bureau policy regarding what constitutes an acceptable MCE, then delineated the 10 essential characteristics of an acceptable MCE study. These characteristics were purposefully generic to ensure that institutions could perform their review with a minimum amount of constraint while insuring that MCE studies done throughout all PSRO areas would have common features and structural integrity. The 10 characteristics which must be met in the performance of an MCE are as follows:

1. it focuses upon a known or suspected problem area impacting on the quality of health care;

2. it focuses on a well defined topic and is carried out in accordance with objectives explicity stated in, and specifically developed for, the study;

3. it utilizes written criteria against which actual patterns of health care practice are compared;

4. it provides for collection of data on a sample of patients, the size and composition of which is appropriate to the study topic and objectives. The MCE study identifies patterns of care related to the subject under study and is not, in general, concerned with individual patients or payment. Therefore, the sample should be drawn from all patients in the institution, with authorization from the institution, and not be limited to Title V, XVIII and XIX patients.

5. it provides for thorough peer analysis of the reasons for any discrepancies between the written criteria which reflect optimal achievable health care practices, and the data collected on actual health care practices to determine whether variations are objectively justifiable or represent problems that require corrective action;

6. it results in specific written recommendations, where indicated, to individuals, boards or committees who are responsible for assuring the quality of care in the institution, and to those who are responsible for effecting changes in health care practices, either through appropriate continuing health education activities, through changes in the organization and administration of health care delivery, or through other means appropriate to the deficiencies identified by the study, in order to improve the quality of care and promote more effective and efficient utilization of facilities and services;

7. it includes documentation regarding when, where and by whom the recommended actions were, in fact, implemented;

8. it includes a plan for follow-up evaluation, where indicated, to determine what changes have occurred as a result of actions recommended pursuant to subparagraph (6) to correct specific deficiencies identified by the study;

9. it provides for such a follow-up evaluation, where indicated, to be completed in a reasonable time, but usually no later than one year following the performance of the initial study. The follow-up evaluation should be limited to relevant key indicators which will reflect the efficacy of the actions recommended; and

10. it at least provides for periodic reporting of a summary of the quality assurance activities to the governing board of the hospital to assist the board in meeting its public responsibility to assure the provision of quality care in its institution. If results of a study require specific board action such results of the particular study must be reported to the board.

Together, this set of ten characteristics establishes a feedback loop which begins with a medical audit to identify problems and includes a reaudit to eliminate the deficiencies found in the initial audit. The first six characteristics describe the actual performance of a medical audit. The first characteristic, the selection of an appropriate topic for study, is a particularly crucial one for the success of the MCE. Only if the topic is one in which there exists problem areas important to large groups of patients and practitioners, will the study ultimately contain significant results. The other five initial characteristics indicate the necessity for setting criteria, selecting statistically appropriate samples of patient charts, abstracting criteria-related data from these charts, identifying deficiencies through analysis of the data, and recommending actions to correct these deficiencies. Most of the widely used audit techniques (JCAH, AHA) address these six characteristics.

The remaining four characteristics set forth the unique follow-up requirements of the PSRO MCE. First, it must be verified that actions recommended after the initial audit were actually implemented. Second, through the mechanism of reaudit, which is specified in characteristics 8 and 9, actions must also be evaluated for their effectiveness in removing deficiencies. Reaudits which are to be performed within 12 months of the completion of the initial audit, again follow the first five steps using either all criteria or only those with which the original audit identified deficiencies. The follow-up steps and the topic selection step are the portions of the methodology most crucial to ensure that the MCE will produce useful results. Without them, there is little chance of converting the initial findings into an actual improvement in the process of medical care.

In addition to these ten characteristics, the Transmittal set policy stating the requirements for the overall operation of a PSRO MCE Program. In particular, it specified the number of MCEs to be done in each PSRO hospital. This was to be based upon the number of admissions in the individual hospital, and consequently ranged between 4 and 12 audits per year. Also, the Transmittal required that each MCE identifying deficiencies of importance was be followed by a reaudit. Finally, it set forth the overall goals of the MCE Program to be achieved by each PSRO. These were: first, that the PSRO must address all areas of health care, not only those which are physician related; second, that the patients reviewed should not only be ones covered by Federal funds;

and lastly, that overall MCE activity should aim towards efficiently obtaining significant results.

In addition to policy determination, the Bureau is responsible for the evaluation and enforcement of MCE program implementation and for ensuring that it has an effect on the health care system in the United States. This report is the first in-depth assessment of the results that have been obtained thus far from MCE activity. In addition, this evaluation attempts to project the kinds of results that are expected from the program in the near future. Until now, evaluation has been limited to summaries of the state of MCE activity implementation. The National Professional Review Council was presented with the findings of an early evaluation last November which indicated that MCE activity was the last major project of each of the conditional PSROs following delegation and concurrent review implementation. In 1975, less than half of the conditional PSROs were shown to be actively performing and reporting their MCE activity via the PSRO Management Information System (PMIS). This system, consisting of abstracts of all audits and reaudits submitted for central Bureau processing, has been the main source for identifying MCE related information (see sample abstracts at the end of this section). By the second quarter of 1976, 52 of 65 PSROs were actively performing and reporting MCE information on the PMIS system. The initial evaluation in 1975 has been continued each quarter, and is now being used to promote program compliance by graphing the activity of each PSRO in relation to others. Thus, PSROs are able to guage their own level of MCE activity relative to similar PSROs.

The present evaluation has been designed and carried out by the BQA in its continuing responsibility for evaluating the MCE program. In it, nationwide activity is summarized and categorized by areas of medical care. Also, the compliance of PSROs with the policy requirements of the transmittal which defines acceptable MCE methodology is explored. In particular, the crucial steps of topic selection and follow-up are assessed as indicators of the success of the MCE program. Finally, the evaluation focuses on the impact which MCEs have had to date in four major areas of medicine and surgery. As recommended by the Institute of Medicine Study, this analysis of impact is based on "short term outcome measures which can be analyzed closer in time to the provision of care than final end result measures." The plans for future long-term evaluation of MCEs have been developed in part and will be discussed at the end of this volume. It is likely that health status indicators will be used in evaluations scheduled to take place over the next several years.

Role of PSROs in Medical Care Evaluation Studies

PSROs have at least five areas of responsibility respective to MCE activity. The Transmittal specifies that they are to ensure the following:

1. The actual performance of MCEs. It is their responsibility to perform audits and follow-up, including reaudits in each of its hospitals which is nondelegated (i.e., not charged with the responsibility of reviewing its own Federal patients). The PSRO is responsible for performing the same number of quality MCEs in the

nondelegated hospital as defined in the Transmittal. In addition, the PSRO is responsible for organizaing areawide MCEs, an activity in which several hospitals perform a single MCE of the same topic with the same criteria on their own patients.

2. Monitoring MCE activity in delegated hospitals. The PSRO is responsible for gauging the appropriate amount of MCE activity in each of the delegated hospitals. It is also responsible for reviewing these studies for structural integrity and to ensure that the studies are actually having impact on patient care.

3. Delegating Review Activity. The PSRO may delegate its review responsibility to hospitals which prove themselves interested and proficient in the performance of medical audit. Once the determination is made, the PSRO is responsible for monitoring this activity for adequate quantity and quality of studies. Delegation of MCE activity is independent of the delegation of Concurrent Review.

4. Reporting all activity to BQA. The PSRO is responsible for reporting all activity by means of the PSRO Management Information System. For each MCE study completed in a delegated or nondelegated hospital, an MCE Study Abstract is completed. A similar reaudit is submitted to BQA at the completion of each reaudit. Each MCE Study Abstract (see attached Form 131) contains information on the exact MCE methodology used, the amount of time and manpower required to perform the studies, the problem areas of medicine, surgery, or hospital administration under review, the type of patients being audited, and the integrity of the MCE study structure. The forms also contain information on the results obtained from the initial audit. These results take the form of the number of deficiencies identified, and the number and type of recommended actions taken to correct these deficiencies. The Restudy (Reaudit) form PMIS 133 gives similar information on the steps taken to perform the reaudit. Further results are identified on these by the notation of whether or not deficiencies have been removed by the time of the reaudit. All of the results on the PMIS forms are called proximate results. These results are indicative of conclusions which can be drawn about medical care and/or patient outcomes.

But the importance of these conclusions and their effect on patients cannot be accurately determined from proximate results alone.

A factor limiting evaluation, at this point in time, relates to reporting requirements. It is the responsibility of the PSRO to submit each of its 131 and 133 forms 45 days after the end of the quarter in which the audit or reaudit was completed. The forms are processed by the PMIS contractor and checked for completeness and consistency. Many of the forms have been returned to the PSROs for correction and completion which causes delay in their entrance into the overall PMIS data base. It must be emphasized that the time from completion of an audit or reaudit to the time of its entry into the PMIS data base can be as much as 7 months. Because information from these forms serve as the initial source of data for this evaluation, this evaluation limits much of its analysis to MCEs completed by December of 1976.

1. Brook, Robert H. "Quality of Care Assessment: A Comparison of Five Methods of Peer Review" DHEW Publication No. HRA-74-3100

2. Brook, Robert H. and Appel
New England Journal of Medicine No. 288, June 21, 1973, p. 106

3. Donabedian, Avedis "Medical Care Appraisal — Quality and Utilization" Administration. Volume II (from A Guide to Medical Care Wash, D.C.: American Public Health Association, 1969)

4. E. Sheldon and W. Movie (eds), "Indicators of Social Change" New York Russell Sage Foundation, 1968 p. 576

5. Donabedian, Avedis "Essential Eléments of Good Medical Care" p. 23

6. Roemer, M. I.: Evaluation of Health Service Programs and Levels of Measurement. HSMHA Health Reports 86:839-848, 1971

7. Institute of Medicine. Report of a Study Assessing Quality in Health Care: An Evaluation. November 1976 IOM Publication 76-04

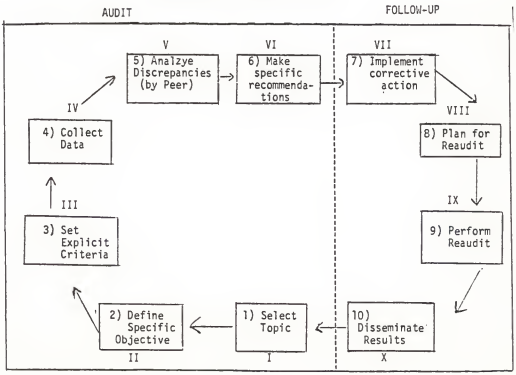
3. MCE PROGRAM ACTIVITY SUMMARY

3.1 Activity Report on the Medical Care Evaluation Component of the PSRO Program

Objective

This section reports and describes information on the quantity, distribution, and subject content of MCE audits. For the purpose of this report, an audit is defined as that part of an MCE which is completed through the sixth step; "specific recommendations" (see diagram I). Discussion of the concluding MCE steps 7-10, known as the reaudit stages, is found in Chapter V.

DIAGRAM 1. MCE PROCESS



Data Sources and Validity

The PSRO Management Information System (PMIS) has been gathering data on MCE activity since the beginning of the program in 1975. Reporting by the PSROs is quarterly through the use of the following three forms:

- BQA 131 - The MCE Study Abstract, transmitted by the PSRO for each MCE completed through the analysis stage.
- BQA 133 - The MCE Restudy Abstract, transmitted after a restudy is performed.
- BQA 135 - The MCE Study Status Report, reports the status of each MCE underway in a given quarter, regardless of its completion stage.

There is no attempt by BQA to validate the data elements accumulated through PMIS. Forms received by the PMIS contractor, however, are checked for completeness and consistency; problems are returned to the PSRO for resolution. The quality of the data for this study is further influenced by several time dependent factors:

1. Under the PSRO Program, hospitals are required to complete specified numbers of MCEs. While it is to their interest to promptly submit quarterly reports, (the final due date for these reports is 45 days post quarter end), there is considerable lag in meeting reporting requirements.
2. Data processing procedures can lead to lags of several months before received PMIS forms are analyzed. Such lags are randomly distributed and thus do not contribute any known bias.
3. When incomplete forms are returned to PSROs for additional information, there usually is an additional delay of 1 1/2 months.

Bureau of Quality Assurance
Health Services Administration

Office of Management and Budget
Approval Number 68-R1476
Page III-12

HOSPITAL ID NO. 071

MEDICAL CARE EVALUATION STUDY ABSTRACT

PSRO NAME: ROCKVILLE PSRO

PSRO NO. 842

MCE STUDY BEGUN: Month 07 Year 74

MCE STUDY COMPLETED THROUGH STEPS BELOW: Month 09 Year 74

CONDUCTED BY: ☐ PSRO ☒ DELEGATED HOSPITAL

MCE STUDY ID NO. 16

1. STUDY TOPIC (Write in) Management of patients with suspected AMI within first hour after admission to emergency room

2. METHOD FOR SELECTING STUDY (Check One)
- ☐ a. PROFILE ANALYSIS
- ☐ b. CONCURRENT REVIEW
- ☐ c. OTHER MCE STUDY
- ☐ d. ANALYSIS OF MEDICAL RECORDS
- ☒ e. PERCEIVED NEED
- ☐ f. OTHER (Specify) _____

3. TOPIC CHARACTERISTIC (Check One)
- ☐ a. INCIDENCE/PREVALENCE
- ☒ b. PREVENTABLE MORBIDITY/MORTALITY
- ☐ c. COST OF CARE
- ☐ d. OTHER (Specify) _____

4. HOSPITAL STUDY RESPONSIBILITY (Check One)
- ☒ a. MEDICAL AUDIT COMMITTEE
- ☐ b. UR COMMITTEE
- ☐ c. SERVICE/DEPT. (Specify) _____
- ☐ d. OTHER (Specify) _____

5. NON-PHYSICIAN PARTICIPATION (Specify)

E.R. Nursing

Respiratory therapy

X-ray technologists

6. DERIVATION OF CRITERIA (Check One)
- ☒ a. SELF GENERATED
- ☐ b. NATIONAL ORGANIZATION
- ☐ c. OTHER PSRO(S)
- ☐ d. OTHER HOSPITAL(S)
- ☐ e. OTHER (Specify) _____

7. STUDY SITE (Check One)
- ☐ a. PSRO-WIDE
- ☐ b. PSRO SUB-AREA (NO. HOSPITALS _____)
- ☒ c. INDIVIDUAL HOSPITAL
- ☐ d. SERVICE /DEPT. OF HOSP. (Specify) _____
- ☐ e. OTHER (Specify) _____

8. TYPE OF DATA COLLECTION (Check One)
- ☐ a. RETROSPECTIVE
- ☐ b. CONCURRENT
- ☒ c. MIXED

9. SAMPLE CHARACTERISTICS
- a. NUMBER OF SUBJECTS 50
- b. POPULATION 100% sample
- c. OTHER all pts. adm. to ER with suspected MI in last 3 months

10. DATA INSTRUMENT (Check One)
- ☒ a. SPECIAL FORM
- ☐ b. ROUTINE FORM
- ☐ c. OTHER (Specify) _____

11. DATA QUALITY CONTROLS (Check all that apply)
- ☒ a. VERIFIED
- ☐ b. VERIFIED - SOURCE INADEQUATE
- ☐ c. VERIFIED - DATA INACCURATE
- ☐ d. NONE
- ☐ e. OTHER (Specify) _____

12. DATA PROCESSING (Check One)
- ☒ a. MANUAL
- ☐ b. EDP
- ☐ c. MIXED

EDP Cost: $ _____

13. FINDINGS (Check One)
- ☐ a. COMPLIANCE WITH STANDARDS (Go to item 20)
- b. VARIATION FROM STANDARDS
  - ☐ (1) VARIATION JUSTIFIED (Go to item 20)
  - ☐ (2) DEFICIENCY IDENTIFIED (Proceed with item 14)
  - ☒ (3) MORE THAN ONE DEFICIENCY (Proceed with item 14, specify number 2)

Continued on reverse side

14. DEFICIENCY ANALYSIS (Check One)

- ☐ a. KNOWLEDGE
- ☒ b. PERFORMANCE
- ☐ c. OTHER _____

ATTRIBUTION (Check all that apply)

- ☐ a. ONE HOSPITAL
- ☐ b. MORE THAN ONE HOSPITAL (NO. ____)
- ☐ c. INDIVIDUAL PHYSICIAN
- ☒ d. GROUP(S) OF PHYSICIANS
- ☒ e. NON-PHYSICIAN(S)
- ☒ f. ADMINISTRATIVE
- ☐ g. FURTHER STUDY NEEDED
- ☐ h. OTHER _____

16. TYPE OF ACTION RECOMMENDED (Check all that apply and describe)

- ☐ a. PRACTITIONER COUNSELLING _____
- b. EDUCATIONAL PROGRAM efficacy of im-
  - ☒ (1) SINGLE HOSPITAL medicte monitoring
  - ☐ (2) PSRO SUB-AREA of cardiac rhythm
  - ☐ (3) PSRO - WIDE _____
- ☒ c. ADMINISTRATIVE CHANGE organize an emergency team for use in ER
- ☐ d. CHANGE IN CONCURRENT REVIEW _____
- ☐ e. OTHER REVIEW MODIFICATION _____
- ☐ f. OTHER _____

17. ESTIMATED RE-STUDY DATE (mo/yr) Jan 1975

18. IF EDUCATION IS RECOMMENDED, IS THERE LINKAGE WITH EXISTING CONTINUING MEDICAL EDUCATION ACTIVITIES?

☒ yes ☐ no

IF YES, PLEASE DESCRIBE: _____

19. RESPONSIBILITY FOR ACTION (Check all that apply)

- ☒ a. MEDICAL STAFF (COMMITTEE)
- ☐ b. HOSPITAL BOARD OF TRUSTEES
- ☒ c. HOSPITAL ADMINISTRATION
- ☐ d. SERVICE/DEPT. (Specify) _____
- ☐ e. OTHER (Specify) _____

20. PERSON HOURS UTILIZED (Round to half hours)

MCE STUDY TASK		PHYSICIAN	OTHER
a.	SELECTION AND DESIGN	1	1
b.	SETTING CRITERIA AND STANDARDS	3	
c.	DATA COLLECTION AND DISPLAY		28
d.	INTERPRETATION AND ANALYSIS OF FINDINGS	2	2
e.	TOTAL	6	31

ADDITIONAL EXPLANATORY REMARKS (USE ADDITIONAL PAPER IF NECESSARY)

13b. Deficiencies identified:

1) Lack of E.R. staff trained in handling of suspected A.M.I. patients resulting in unnecessary delays in initiating monitoring of cardiac rhythm.

2) Delays in obtaining patient chest X-rays fram radiology department.

16 c. (continued): return chest X-rays to emergency room for review by physician team immediately to assist in determining further course of treatment.

RESERVED FOR PROCESSING CONTROL

Bureau of Quality Assurance
Health Services Administration

RE-STUDY REPORT

Office of Management and Budget Approval Number 68-R1476 III-17

HOSPITAL ID NO. 071

PSRO NAME: Rockville PSRO

PSRO NO. 842

DATE RESTUDY BEGAN: Month 01 Year 75

DATE RESTUDY COMPLETED: Month 02 Year 75

CONDUCTED BY: ☐ PSRO ☒ DELEGATED HOSPITAL

1. IDENTIFICATION OF STUDY
   a. TOPIC OF MCE STUDY: Patients with AMI in first hour after admission to ER
   b. ABSTRACT ID NUMBER:
   c. DATE STUDY COMPLETED THROUGH RECOMMENDED ACTIONS: 09/74
2. RESTUDY METHODOLOGY
   a. TYPE OF DATA COLLECTION (Check One)
   ☒ (1) RETROSPECTIVE
   ☐ (2) CONCURRENT
   ☐ (3) MIXED
   b. SAMPLE CHARACTERISTICS
   (1) NUMBER OF SUBJECTS: 20
   (2) POPULATION: 100% sample
   (3) OTHER DESCRIPTION:
   c. DATA INSTRUMENT (Check all that apply)
   ☐ (1) SPECIAL FORM
   ☐ (2) ROUTINE FORM - SPECIAL ELEMENTS
   ☐ (3) ROUTINE FORM - ROUTINE ELEMENTS
   (4) ELEMENT(S) USED: none
   (5) ELEMENT(S) TO BE INCORPORATED IN ROUTINE DATA SET:
   d. CRITERIA AND STANDARDS (Check One)
   ☒ (1) SUBSET OF ORIGINAL
   ☐ (2) ORIGINAL SET
   ☐ (3) OTHER (Specify):
   e. MODIFICATIONS OF CRITERIA AND STANDARDS (Check One)
   ☐ (1) SUBSTANTIAL
   ☐ (2) SOME
   ☒ (3) NONE

3. FINDINGS
   a. ORIGINAL FINDINGS (Check One)
   ☒ (1) ACTIONS CORRECTED DEFICIENCIES
   ☐ (2) ACTIONS PARTIALLY CORRECTED DEFICIENCIES
   ☐ (3) ACTIONS PRODUCED NO CHANGE
   ☐ (4) ACTIONS NOT IMPLEMENTED
   b. NEW PROBLEM IDENTIFIED (Specify):
4. RECOMMENDATIONS (Check all that apply)
   ☐ a. SAME EDUCATION PROGRAMS
   ☐ b. NEW EDUCATION PROGRAMS (Specify):
   ☐ c. SAME ADMINISTRATIVE CHANGE
   ☐ d. NEW ADMINISTRATIVE CHANGE (Specify):
   ☐ e. RESTUDY (Estimated Mo/Yr)
   ☐ f. MCE STUDY
   ☐ g. CHANGE IN CONCURRENT REVIEW (Specify):
   ☐ h. OTHER REVIEW MODIFICATION (Specify):
   ☒ i. NO ACTION NECESSARY
   ☐ j. OTHER (Specify):
5. PERSON HOURS UTILIZED (Round to half hours)
   a. PHYSICIAN: 1/2
   b. OTHER: 4
   c. TOTAL: 4 1/2

ADDITIONAL EXPLANATORY REMARKS (USE ADDITIONAL PAPER IF NECESSARY)

Inservice training program on cardiac monitoring was conducted; restudy showed no delays in start of monitoring for suspected AMI patients. Emergency team was organized and began work in E.R. on 11/1/74. Radiology dept. instituted new procedures for X-rays of E.R. patients; delays in obtaining X-rays have now been eliminated.

RESERVED FOR PROCESSING CONTROL

Only data accumulated by June 1, 1977 are included in this report. Because of the above factors, it is recognized that some MCEs done in the quarters closest to this deadline may be excluded.

Methodology

An accounting was done of MCE audit activity completed from the geginning of the program in 1975 through the last month in 1976. Tabulabtions were made of the number of audits and their distribution by PSRO and by subject content area. Rank ordering was done for topic categories and their classifications.

Although much of the data are presented by quarter, for clarity of display, the data also were grouped by quarters into two basic observation periods.

Observation Period I - Quarter 2, 1975 through Quarter 1, 1976

Observation Period II - Quarters 2 through 4, 1976

Additional data which became available after the start of this report are shown as updated information.

Findings and Analysis

Quantity and Distribution of MCE Audits

Chart I shows that total number of MCE audits reported through the PMIS since early 1975. The number rises dramatically until the first quarter of 1977. The subsequent decline is a function of reporting delays. Updated information for Periods I and II is indicated by the clear bars.

Chart 1

MCE Initial Audit Activity, By Quarter

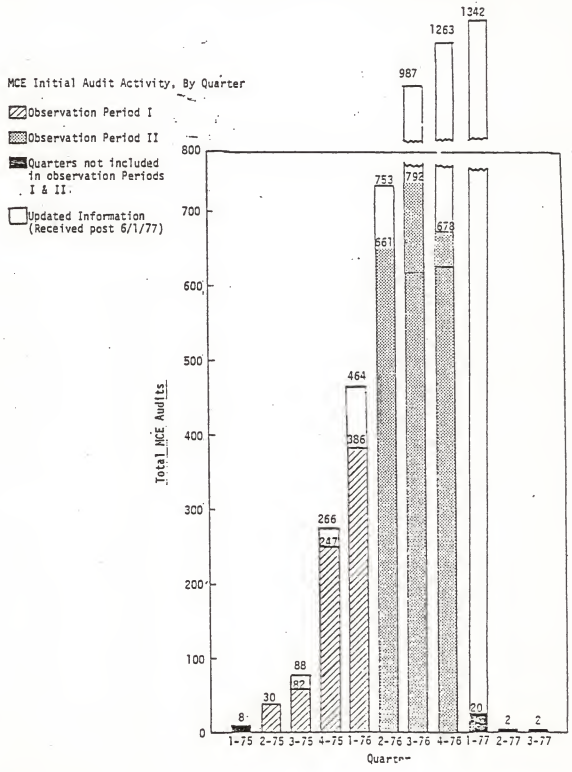


Chart II presents the growth in MCE audit activity both in the number of PSROs reporting audits and in the average number of audits per reporting PSRO. During observation period I, 41 PSROs reported audits as compared to a total of 56 of the original 65 PSROs reporting audits during observation period II. This growth in PSRO activity reflects the PSROs' increased operational capabilities. There is a start-up time required for PSROs to develop the necessary organizational capacity to perform review functions as well as to delegate any or all of those functions to hospitals. During its early stages, the PSRO directs most administrative attention towards concurrent review. Consequently, the implementation of MCEs is a relatively late development, generally one year after the institution of concurrent review.

As shown in Table I, the 56 reporting PSROs display a wide variation in MCE audit activity, ranging from only 1 audit to 317 as of June 1, 1977. The most active PSRO in this group is the Mississippi Foundation for Medical Care, Inc. (PSRO Number MS01), whose audits account for 10% of all MCE activity. Further, Chart III demonstrates that 45% of all MCE activity can be attributed to 10 PSROs. Such concentrations of activity naturally limit the conclusions which can be drawn from these data.

Increases in the number of MCE audits reported over time tend to reflect increased productivity of the 10 most active PSROs. This can be seen in Table I, Quarterly Distribution of MCE Audit Activity. There are, however, two PSROs which had minimal activity during Observation Period I but are among the most active of Observation Period II. One PSRO exhibited the reverse trend.

Chart II

Average PSRO MCE Audit Activity, By Quarter

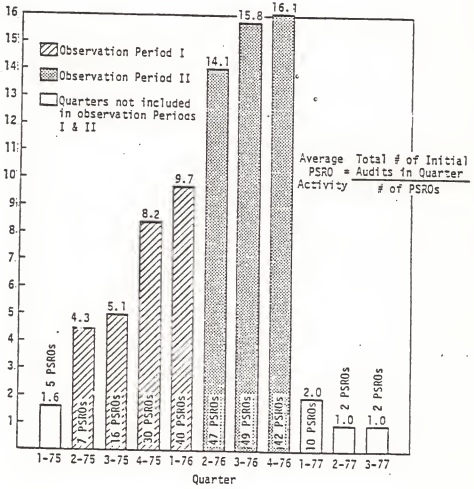
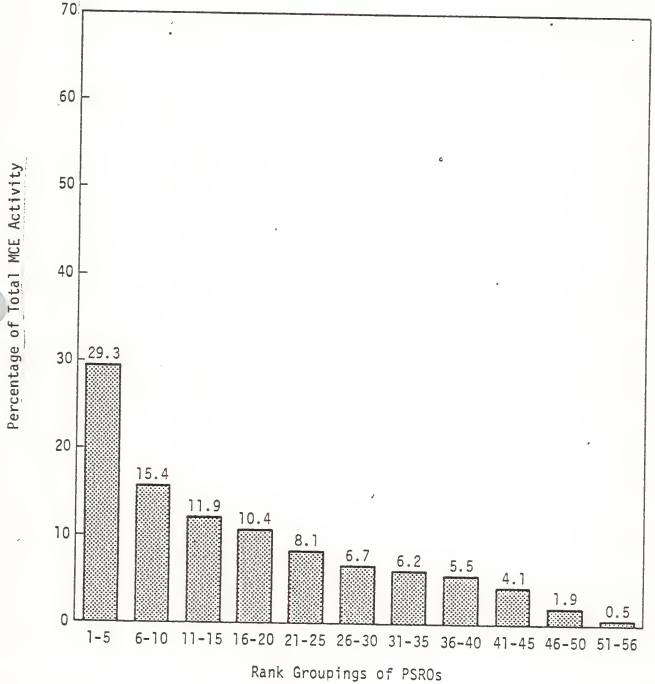


Table I
Quarterly Distribution of MCE Audit Activity
(Reported by PSROs as of June 1, 1977)

PSRO I.D. Number	Quarters										Prior to 1975 Quarter 2	Total in PSRO
	1975 2	1975 3	1975 4	1976 1	1976 2	1976 3	1976 4	1977 1	1977 2	1977 3		
00RO1	2	14	13	6	1	3	-	-	-	-	3	42
00RO2	-	-	-	5	15	17	24	-	-	-	-	61
0WA01	-	-	-	5	21	38	19	1	-	-	-	84
1CT01	-	1	-	3	-	3	2	-	-	-	-	9
1CT02	-	-	-	4	5	7	8	2	-	-	-	26
1CT04	-	-	1	6	11	9	13	-	-	-	-	40
1MA03	-	2	7	9	12	2	-	-	1	-	-	33
1MA04	-	-	4	1	5	15	14	-	-	-	-	39
1ME01	-	-	2	6	15	8	1	-	-	-	-	32
2NJ02	-	-	2	1	9	13	13	-	-	-	-	38
2NY02	-	2	3	15	23	21	21	-	-	-	-	85
2NY09	-	-	-	3	19	20	16	1	-	-	-	59
2NY10	-	-	-	6	10	7	4	-	-	-	-	27
2NY15	5	4	7	16	1	-	-	-	-	-	2	35
2NY16	-	-	4	8	9	6	-	-	-	-	1	27
30C01	-	-	1	6	7	15	4	-	-	-	-	33
3MD01	-	-	1	-	-	-	1	-	-	-	-	2
3MD02	-	2	21	26	35	30	25	-	-	-	-	140
3MD03	-	-	3	7	4	2	6	1	-	-	-	23
3MD04	-	-	-	1	1	3	-	-	-	-	-	5
3MD05	1	-	10	9	22	2	9	-	-	-	-	53
3MD06	-	-	9	10	9	9	5	-	-	-	-	42
3MD07	-	1	8	11	11	3	14	1	-	-	-	49
3PA06	-	-	-	3	14	36	6	-	-	-	-	59
3PA07	-	-	-	3	12	11	24	-	-	-	-	50
3PA09	1	1	-	13	36	40	23	-	-	-	-	114
3PA11	-	-	11	6	20	30	35	1	-	-	-	103
3WV01	-	-	7	8	3	29	36	-	-	1	-	84
4MS01	14	28	39	45	60	52	72	5	-	-	1	317
4SC01	-	1	6	28	44	52	1	-	-	-	-	132
5MI05	-	-	2	1	9	17	10	-	-	-	-	39
5MN02	-	9	26	21	28	22	46	2	-	-	-	154
5OH04	-	-	2	16	15	17	8	-	-	-	-	58
5WI02	-	2	15	24	32	-	-	-	-	-	-	73
6AR01	-	-	-	10	10	27	21	-	-	-	-	68
6NM01	-	-	6	5	5	13	7	-	-	-	-	36
6WY01	6	-	-	-	-	18	-	-	-	-	-	24
9CA01	-	11	18	15	10	-	1	-	-	-	1	56
9CA03	-	2	17	10	6	-	-	-	-	-	-	35
9CA08	-	1	2	3	8	2	-	-	-	-	-	16
9CA27	-	1	5	10	14	4	11	-	-	-	-	45
1CT03	-	-	-	-	16	20	40	-	1	-	-	77
1MA01	-	-	-	-	2	7	25	-	-	-	-	34
1MA05	-	-	-	-	2	16	19	3	-	1	-	41
1RI01	-	-	-	-	-	2	-	-	-	-	-	2
2NJ01	-	-	-	-	1	9	22	-	-	-	-	32
2NY01	-	-	-	-	-	-	2	-	-	-	-	2
2NY11	-	-	-	-	8	3	13	-	-	-	-	24
2NY13	-	-	-	-	2	3	2	-	-	-	-	7
3PA12	-	-	-	-	-	-	16	-	-	-	-	16
5MI01	-	-	-	-	-	1	-	-	-	-	-	1
5OH01	1	-	1	1	30	45	39	-	-	-	-	117
5WI01	-	-	-	-	6	22	1	-	-	-	-	29
7MO03	-	-	-	-	-	7	-	2	-	-	-	9
8CO01	-	-	-	-	23	34	-	-	-	-	-	57
8MT01	-	-	-	-	-	1	-	-	-	-	-	1
TOTAL	30	82	253	386	662	773	679					2,897

Chart III

Percent of Total MCE Activity, By Ranked Groupings



Compliance with MCE Numerical Requirements

The numerical requirements for the performance of MCEs were distributed on January 25, 1977 through PSRO Transmittal No. 43. (See Chapter 2, background) Under binding review, a minimum of 4 MCEs per year is required per hospital. In contrast, the largest hospitals must perform 12 per year. Since these requirements are per calendar year, a calculation of compliance with the regulation cannot be made earlier than March 1978. A report is now planned for that time.

In an effort to encourage compliance, data on the numbers of MCEs done by each PSRO per quarter and per year are sent to all PSROs via PMIS Output Reports. These reports began in June 1977. With this information, an individual PSRO can compare it's own activity to that of similar PSROs.

MCE Content Areas

Major Classifications

The topic of each individual MCEs is reported on the PMIS forms. For analysis purposes, topics were placed by the contractor into one of three internally consistent classifications which are based on medical care procedures. Judgments about assigment of audit topics into the "medical", "surgical", and "administrative and miscellaneous procedures" classification were made independently by two trained raters. Inconsistencies were reconciled by senior project personnel. All coding decisions were reviewed for appropriateness and accuracy by the project monitor, a physician. The classifications were defined as follows:

- Classification A: Medical

  This classification includes all medical diagnoses and procedures for which the generally accepted treatment is medical. Ulcers, leukemias, lymphomas and neoplasms not treated surgically were included in this classification.

- Classification B: Surgical

  This classification includes all surgical and obstetrical procedures as well as invasive diagnostic procedures. It also includes those diagnoses for which surgery is generally indicated, such as breast lesions and cholelithiasis. Neoplasms usually treated surgically were included in this classification.

- Classification C: Administrative and Miscellaneous Procedures

  This classification includes administrative topics such as audits and examination of length of stay. Studies on the use of particular facilities or services within the hospital, such as emergency room and x-rays, were coded into Classification C.

Table II shows the distribution of audits for the two observation periods. The proportion of audits in each classification remained constant over time; about 45% were medical, 45% surgical, and 9% administrative. There was nearly a three-fold increase in activity across all classifications in Period II, indicating a strong proportionate growth. In Table III, the same information is broken down by quarters. Quarter 2-75 stands apart due to its small number of MCE audits and somewhat different distribution.

Topic Categories

MCE topics are selected by the physicians who design the studies, and may be highly specific to a paritcular condition or

Table II

Distribution of MCE Audits by Major Classification

Classification	Period I (41 PSROs)		Period II (56 PSROs)		TOTAL	
	Number of audits in classification	Percent of all audits in classification	Number of audits in classification	Percent of all audits in classification	Number of audits in classification	Percent of all audits in classification
A (Medical)	340	45.6	959	45.0	1,299	45.2
B (Surgical)	336	45.1	975	45.8	1,311	45.6
C (Administrative)	69	9.3	197	9.2	266	9.2
TOTAL	745	100.0%	2,131	100.0%	2,876	100.0%

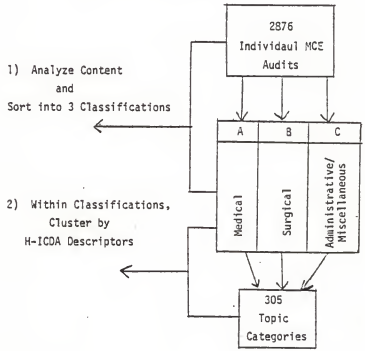
Table III

Quarterly Distribution of MCE Audits by Major Classification

	Classification	Quarter 2-75		Quarter 3-75		Quarter 4-75		Quarter 1-76		Quarter 2-76		Quarter 3-76		Quarter 4-76		TOTAL	
		Number of Studies in Classification	Percent of All Audits in Quarter 2	Rank of Classification for Quarter 2	Number of Audits in Classification	Percent of All Audits in Quarter 3	Rank of Classification for Quarter 3	Number of Audits in Classification	Percent of All Audits in Quarter 4	Rank of Classification for Quarter 4	Number of Audits in Classification	Percent of All Audits in Quarter 1	Rank of Classification for Quarter 1	Number of Audits in Classification	Percent of All Audits in Quarter 2	Rank of Classification for Quarter 2	Number of Audits in Classification	Percent of All Audits in Quarter 3	Rank of Classification for Quarter 3	Number of Audits in Classification	Percent of All Audits in Quarter 4	Rank of Classification for Quarter 4	Number of Audits in Classification	Percent of Audits Involved
A		18	60.0	1	38	46.3	1	108	43.7	2	176	45.6	1	303	45.8	2	354	44.7	2	302	44.5	2	1,299	45.2
B		10	33.3	2	35	42.7	2	118	47.8	1	173	44.8	2	306	46.3	1	363	45.8	1	306	45.1	1	1,311	45.6
C		2	6.7	3	9	11.0	3	21	8.5	3	37	9.6	3	52	7.9	3	75	9.5	3	70	10.3	3	266	9.2
Total		30	100%		82	100%		247	100%		386			661	100%		792	100%		678	100%		2,876	100%

its treatment. Since a high degree of specificity was not useful for this analysis, categories were constructed by content-analyzing the study topics. Groups or "topic categories" were then formed using standard H-ICDA descriptors. Senior project personnel, including a physician, reviewed the sorting process for accuracy and appropriateness. The result was a reduction of more than 2,876 audit topics into 305 relatively homogeneous topic categories. For the most part, these topic categories represented conditions, procedures or diagnoses such as hypertension, delivery, or myocardial infarction.

DIAGRAM II: Process of Arranging MCE Topics



The Twenty Most Frequently Audited Topic Categories

Table IV shows the twenty topic categories most frequently chosen for audit in each observation period. The rank and classification are also given. Some of the findings are:

1) While there are some shifts in rank among the topics, the ranking remains generally stable from Period I to Period II. The correlation between the two rankings is statistically significant at the .01 level.

2) Myocardial infarction, pneumonia, cholecystectomy, and appendectomy were the four most frequently audited topic categories in both time periods. However, they represented 4% less of the audit activity in Period II, possibly indicating a trend toward topic diversification. This is not a statistically significant difference.

3) The same trend toward diversification is possibly indicated by the fact that while the top twenty categories accounted for 56.7% of all audits in Period I, they represented only 53.9% of Period II's activity. That is, the amount of audits done on topic categories other than the twenty most frequent rose from 43.3% in Period I to 46.1% in Period II. These are not statistically significant differences.

4) No single topic category dominates the list. Table V presents a quarterly breakdown of the same information. Within any quarter, myocardial infarction, pneumonia, and cholecystectomy consistently ranked among the most frequently audited. Topic categories which received high audit attention in one or more quarters without making the overall "top twenty" list include urinary tract infection, depression, antibiotics, diverticulitis, and thrombophlebitis.

On the average, the twenty most frequently chosen topic categories account for 57% of the audits performed during a quarter. This means that the

Table IV

The Twenty Most Frequently Initially Audited Topic-Related Category

Classification	Topic-Related Category	Rank Period I (41 PSROs)	Rank Period II (56 PSROs)	Number of audits Period I (41 PSROs)	Number of audits Period II (56 PSROs)	Percent of all audits Period I (41 PSROs)	Percent of all audits Period II (56 PSROs)	TOTAL, Periods I & II	
								Number of audits	Percent of all audits
A	Myocardial Infarction	1	1	49	106	6.6	5.0	155	5.4
A	Pneumonia	2	2	42	94	5.6	4.4	136	4.7
B	Cholecystectomy	3	3.5	40	84	5.4	3.9	124	4.3
B	Appendectomy	4	3.5	27	84	3.6	3.9	111	3.9
B	Hysterectomy	5	5	25	69	3.4	3.2	94	3.3
B	C-Section	7.5	8.5	21	62	2.8	2.9	83	2.9
B	Tonsillectomy and Adenoidectomy	9	8.5	19	62	2.6	2.9	81	2.8
B	Hip Fracture	10	7	18	63	2.4	3.0	81	2.8
A	Diabetes	12.5	6	16	65	2.1	3.1	81	2.8
B	Prostatectomy	6	10.5	24	50	3.2	2.3	74	2.6
B	Breast Lesions	15	10.5	15	50	2.0	2.3	65	2.3
C	Emergency Room	12.5	12	16	46	2.1	2.2	62	2.2
B	Inguinal Hernia	13	14	16	43	2.1	2.0	59	2.1
A	Gastroenteritis	18	13	12	45	1.6	2.1	57	2.0
A	Ulcer	16.5	15	14	42	1.9	2.0	56	1.9
B	Cataract	16.5	16	14	41	1.9	1.9	55	1.9
A	Hypertension	13	18	16	38	2.1	1.8	54	1.9
B	Delivery	7.5	-	21	-	2.8	-	52	1.8
A	Cerebrovascular Accident	-	17	-	39	-	1.8	48	1.7
A	Congestive Heart Failure	20	19	9	37	1.2	1.7	46	1.6
A	Asthma	19	20	10	32	1.3	1.5	42	1.5
	TOTAL			424	1,152	56.7	53.9	1,616	56.0

Table V

The Twenty Most Frequently Audited Topic Categories in Each Quarter

Topic Related Categories	Classification	Quarter 2-75			Quarter 3-75			Quarter 4-75			Quarter 1-76			Quarter 2-76			Quarter 3-76			Quarter 4-76			TOTAL		
		Number of initial audits in topic related category	Percent of all initial audits in Quarter 2	Rank of topic in Quarter 2	Number of initial audits in topic related category	Percent of all initial audits in Quarter 3	Rank of topic in Quarter 3	Number of initial audits in topic related category	Percent of all initial audits in Quarter 4	Rank of topic in Quarter 4	Number of initial audits in topic related category	Percent of all initial audits in Quarter 1	Rank of topic in Quarter 1	Number of initial audits in topic related category	Percent of all initial audits in Quarter 2	Rank of topic in Quarter 2	Number of initial audits in topic related category	Percent of all initial audits in Quarter 3	Rank of topic in Quarter 3	Number of initial audits in topic related category	Percent of all initial audits in Quarter 4	Rank of topic in Quarter 4	Number of initial audits in topic related category	Percent of initial audits in topic related category	Rank of topic in Category [1 and 4]
Myocardial Infarction	A	5	16.7	1.5	5	6.1	3.5	16	6.8	1	23	6.0	1	37	5.6	1.5	35	4.4	2	34	5.0	1	155	5.4	
Pneumonia	A	5	16.7	1.5	6	7.3	2	13	5.3	2.5	18	4.7	2.5	37	5.6	1.5	29	3.7	5.5	28	4.1	2.5	126	4.7	
Cholecystectomy	B	1	3.3	6	8	9.8	1	13	5.3	2.5	18	4.7	2.5	23	3.5	6	42	5.3	1	19	2.8	7	124	4.3	
Appendectomy	B	-	-	-	3	3.7	7.5	9	3.6	5.5	14	3.6	5.5	31	4.7	3	29	3.7	5.5	25	3.7	4	111	3.9	
Hysterectomy	B	-	-	-	4	4.9	5.5	9	3.6	5.5	12	3.1	7	16	2.4	10	31	3.9	3	22	3.3	5	94	3.3	
C-Section	B	2	6.7	4	-	-	-	7	2.8	7	10	2.6	8.5	27	4.1	4	18	2.3	11.5	17	2.5	105	81	2.8	
Tonsillectomy and Adenoidectomy	B	-	-	-	-	-	-	11	4.5	4	8	2.1	13	24	3.6	5	20	2.5	9	18	2.7	8.5	81	2.8	
Hip Fractures	B	-	-	-	-	-	-	-	-	-	14	3.6	5.5	18	2.7	8.5	30	3.8	4	15	2.2	12.5	77	2.7	
Diabetes	A	-	-	-	4	4.9	5.5	5	2.0	14.5	7	1.8	16.5	18	2.7	8.5	19	2.4	10	28	4.1	2.5	81	2.8	
Prostatectomy	B	-	-	-	2	2.4	11	6	2.4	9.5	17	4.4	4	13	2.0	13.5	24	3.0	7	12	1.8	17	74	2.6	
Emergency Room	C	-	-	-	2	2.4	11	6	2.4	9.5	8	2.1	13	10	1.5	17.5	18	2.3	11.5	18	2.7	8.5	62	2.2	
Breast Lesions	B	-	-	-	-	-	-	-	-	-	9	2.3	10	20	3.0	7	-	-	-	20	2.9	6	65	2.3	
Inguinal Hernia	B	-	-	-	2	2.4	11	5	2.0	14.5	8	2.1	13	15	2.3	11	13	1.6	19	15	2.2	12.5	59	2.1	
Gastroenteritis	A	-	-	-	3	3.7	7.5	-	-	-	8	2.1	13	14	2.1	12	17	2.1	14.5	14	2.1	14	57	2.0	
Hypertension	A	2	6.7	4	2	2.4	11	5	2.0	14.5	7	1.8	16.5	10	1.5	17.5	17	2.1	14.5	11	1.5	17	54	1.9	
Cataract	B	-	-	-	-	-	-	6	2.4	9.5	8	2.1	13	-	-	-	13	1.6	19	17	2.5	10.5	55	1.9	
Delivery	B	-	-	-	5	6.1	3.5	5	2.0	14.5	10	2.6	8.5	-	-	-	-	-	-	-	-	-	54	1.9	
Congestive Heart Failure	A	-	-	-	-	-	-	4	1.6	19.5	-	-	-	10	1.5	17.5	17	2.1	14.5	-	-	-	46	1.6	
Cerebrovascular Accident	A	-	-	-	-	-	-	4	1.6	19.5	-	-	-	-	-	-	22	2.5	8	-	-	-	48	1.7	
Ulcer	A	-	-	-	2	2.4	11	-	-	-	6	1.6	18.5	12	1.8	15	16	2.0	17	11	1.6	17	56	1.9	
Asthma	A	-	-	-	-	-	-	4	1.6	19.5	-	-	-	13	2.0	13.5	-	-	-	10	1.5	19.5	42	1.5	
Urinary Tract Infection	A	-	-	-	-	-	-	5	2.0	14.5	-	-	-	8	1.2	20.5	-	-	-	-	-	-	34	1.2	
Depression	A	-	-	-	-	-	-	-	-	-	6	1.6	18.5	-	-	-	17	2.1	14.5	-	-	-	42	1.5	
Dilatation and Curettage	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12	1.8	15	32	1.1	
Chronic Obstructive Pulmonary Disease	A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	13	1.6	19	-	-	-	31	1.1	
Patient-Admissions, Transfers, Discharge	C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	1.5	19.5	30	1.0	
Gastrointestinal Cancer	B	-	-	-	-	-	-	-	-	-	-	-	-	10	1.5	17.5	-	-	-	-	-	-	29	1.0	
Genitourinary Cancer	B	-	-	-	-	-	-	6	2.4	9.5	-	-	-	-	-	-	-	-	-	-	-	-	24	0.8	
Diverticulitis	A	-	-	-	-	-	-	4	1.6	19.5	-	-	-	-	-	-	-	-	-	-	-	-	29	1.0	
Thrombophlebitis	A	-	-	-	-	-	-	-	-	-	-	-	-	8	1.2	20.5	-	-	-	-	-	-	20	0.7	
Length of Stay	C	2	6.7	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7	0.2	
Low Back Pain	A	-	-	-	-	-	-	5	2.0	14.5	-	-	-	-	-	-	-	-	-	-	-	-	11	0.4	
TOTAL		17	567		48	585		140	59.9		211	54.7		376	56.9		440	55.6		355	52.3		1,957	68.2	

remaining 43% of audit activity is spread over a wide range of topic categories which consequently receive little attention. This set of less frequently audited topic categories may include up to 285 members.

The Ten Most Frequent Medical Topic Categories

As indicated by Table VI, the most frequently audited topic categories in Classification A (Medical) remained essentially constant during the two observation periods. Though a rank ordering indicated some change in relative frequency of investigation by topic categories, this change is not large. The correlation between the two rank orderings is statistically significant at the .01 level.

Though the overall number of initial audits in Classification A almost tripled between Observation Periods I and II, the percentage of initial audits in Classification A represented by the 10 most frequently audited topic categories remained largely unchanged. The 10 most frequently audited topic categories represented 54.5% of all audits in Classification A during Observation Period I, and 54.7% during Period II. The correlation between these frequencies is statistically significant at the .01 level.

Myocardial infarction and pneumonia were the most frequently audited topic categories in Classification A during both observation periods. Diabetes, gastroenteritis, and ulcers were also frequently audited.

Table VI

The Ten Most Frequently Audited Topic Categories in Classification A (Medical)

Topic Category	Rank - Period I (41 PSROs)	Rank Period II (56 PSROs)	Number of audits Period I (41 PSROs)	Number of audits Period II (56 PSROs)	Percent of total in classification Period I (41 PSROs)	Percent of total in classification Period II (56 PSROs)	TOTAL, Periods I & II	
							Number of audits	Percent of all in classification A
Myocardial Infarction	1	1	49	106	14.4	11.0	155	11.9
Pneumonia	2	2	42	94	12.4	9.8	136	10.4
Diabetes	3.5	3	16	65	4.7	6.8	81	6.2
Gastroenteritis	6	4	12	45	3.5	4.7	57	4.4
Ulcer	5	5	14	42	4.1	4.4	56	4.3
Hypertension	3.5	7	16	38	4.7	4.0	54	4.1
Cerebrovascular Accident	9	6	9	39	2.6	4.1	48	3.7
Congestive Heart Failure	9	8	9	37	2.6	3.9	46	3.5
Asthma	7	9	10	32	2.9	3.3	42	3.2
Depression	9	--	9	--	2.6	--	42	3.2
Urinary Tract Infection	--	10	--	25	--	2.6	34	2.6
TOTAL			106	523	54.5	54.7	751	57.5

The Ten Most Frequent Surgical Topic Categories

Table VII shows that topic categories which were frequently audited in Classification B (Surgical) tended to be constant across the two observation periods. Though there was some variation, the correlation of rank orderings of the categories in the two observation periods is statistically significant at the .05 level. The fluctuation in the ranking of topic categories revolved around delivery, which was more frequently audited in Period I, and cataracts, which were more frequently audited in Period II.

Among surgical topic categories, cholecystectomy, appendectomy and hysterectomy were the most frequently audited. Caesarean section, tonsillectomy and adenoidectomy, and hip fractures also were frequently audited.

The 10 most frequently audited surigical topic categories accounted for 67.4% of the audits in Classification B during Period I, and 61.3% during Period II. The correlation between the proportion of audits represented by the 10 most frequently audited topic categories during Periods I and II is not statistically significant. The decrease of 6.1 percentage points suggests that as time goes on the concentration of audit activity on the 10 most prominent surgical topic categories tends to be redistributed, and that a greater variety of surgical subjects are frequently reviewed by the MCE process.

It may be noted that initially the 10 most frequently audited surgical topic categories accounted for a greater proportion of all

Table VII

The Ten Most Frequently Audited Topic Categories In Classification B (Surgical)

Topic-Related Category	Rank Period I (41 PSROs)	Rank Period II (56 PSROs)	Number of audits Period I (41 PSROs)	Number of audits Period II (56 PSROs)	Percent of total in classification Period I (41 PSROs)	Percent of total in classification Period II (56 PSROs)	TOTAL, (1975 and 1976)	
							Number of audits	Percent of all in classification B
Cholecystectomy	1	1.5	40	84	11.9	8.6	124	9.5
Appendectomy	2	1.5	27	84	8.0	8.6	111	8.5
Hysterectomy	3	3	25	69	7.4	7.1	94	7.2
C-Section	5.5	5.5	21	62	6.3	6.4	83	6.3
Tonsillectomy & Adenoidectomy	7	5.5	19	62	5.7	6.4	81	6.2
Hip Fracture	8	4	18	63	5.4	6.5	81	6.2
Prostatectomy	4	7.5	24	50	7.1	5.1	74	5.6
Breast Lesions	10	7.5	15	50	4.5	5.1	65	5.0
Inguinal Hernia	9	9	16	43	4.8	4.4	59	4.5
Cataract	--	10	--	41	--	4.2	55	4.2
Delivery	5.5	--	21	--	6.3	--	52	4.0
TOTAL			226	608	67.3	62.4	879	67.2

surgical audits than the proportion of all medical audits accounted for by the 10 most frequently audited topic categories in the medical classification. During Period I the top 10 topic categories accounted for 67.3% of surgical audits and 54.5% of medical audits.

As time goes on, however, this difference tends to diminish. During Period II, audits of the top 10 surgical topic categories accounted for 62.4% of all audits in the classification, whereas the top 10 medical topic categories accounted for 54.7% of all audits in that classification.

Thus, as time progresses, the initial concentration of surgical interest in the 10 most popular topic categories redistributes to more closely reflect the distribution within the medical classification.

The Ten Most Frequent Administrative and Miscellaneous Topic Categories

The information displayed on Table VIII demonstrates that administrative and miscellaneous procedures are the least frequently audited of the MCE topics. The relative quantity of audits performed in this classification is small, only 9.2% of the total. The frequency with which topics in this classification were audited is not of a sufficient magnitude to permit a rank order correlation.

Certain emergency room procedures such as patient admissions, transfer, discharge procedures, and antibiotics were the most frequently

audited topic categories in Classification C. Blood usage, transfusions, and laboratories were also frequently investigated.

3.2 Conclusions from Chapter III

The analysis done in this first section revealed the following:

1. Of the 65 original PSROs, 56 have instituted MCE activity and are reporting audits through the PMIS.

2. The total number of MCE audits completed each quarter is rapidly growing. Approximately 1,000 audits were completed each quarter during observation Period II. For the first quarter of 1977, 1,342 MCE audits were reported in the PMIS.

3. The distribution of reported MCE audits is concentrated in 10 PSROs whose activity accounts for 45% of the total. During the last quarter analyzed (4-76), the average number of audits per PSRO is 16.1.

4. Since annual requirements for the numbers of MCEs per hospital were issued effective January 1977, compliance to that ruling can be assessed in March 1978. In the interim, the quarterly PMIS Output Report informs PSROs of their relative level of activity.

5. Few MCE topics address global issues of medical care or patient outcome. Instead, topics tend to be specific medical diseases, surgical procedures, or discrete aspects of patient administration. Topics are almost equally distributed within these first two classifications, medical and surgical; each claiming about 45% of the total audit activity. Administrative procedures are chosen for topics approximately 9% of the time.

6. The 20 most frequently audited topic categories constitute 56% of all MCE audits. There is evidence to suggest that this concentration is lessening somewhat as time passes.

4. ANALYSIS OF MCE RESULTS IN FOUR MAJOR TOPIC CATEGORIES

4.1 Introduction

This second section of the evaluation report presents an analysis of the process and results obtained from the assessment of all completed MCE audits and reaudits in the categories of myocardial infarction, cholecystectomy, appendectomy and pneumonia. For each topic, all deficiencies found in medical care or patient outcome are displayed in tabular form (Exhibits I-IV) along with their rate of occurrence. Deficiencies are then categorized according to problem areas (Tables XII-XV). An examination of the information on each of these Exhibits and Tables indicates the degree to which MCEs in the four categories can be considered successful. Improvements, or lack of improvements, in deficiency rates point out whether or not these MCEs have had at least a short term impact. Four subchapters, one for each topic category, are presented below. Each of these subchapters summarizes the overall adequacy of the MCE process for the studies examined and summarizes the MCE results for each of the four topic categories considered. Finally, the last subchapter examines the capabilities of the MCE as a tool for revealing and removing problem areas.

4.2 Methodology for the Analysis of MCE Results

Methodology

Based on their frequency of completion and above-average likelihood of containing high impact MCEs (see Chapter 5 for an explanation of the rating system that determined this likelihood), the topic categories myocardial infarction, pneumonia, appendectomy and cholecystectomy were selected for an assessment of the results of MCEs. A catalog of all completed and reported audits and reaudits was developed for each of the four topic categories. In cases where a full audit/reaudit cycle had been made, the responsible PSROs were requested to send to the contractor all audit notes, summaries and other data relevant to these particular studies. Table VIII consists of a distribution by topic category of the number of PSROs represented by this collection of studies, the number of reaudits reported completed, the number of studies actually submitted by the PSROs after they were requested to do so, and the number actually found acceptable for evaluation. From the MCEs sent in by various PSROs, ten were selected for analysis in the three categories, myocardial infarction, pneumonia and appendectomy. Seven were selected for analysis in the category cholecystectomy.

The data in Table IX are current as of August 15, 1977 which was three days beyond the deadline for submission by the PSROs of requested studies. A review of the table shows that while there were not many reaudits completed in each topic area, for each of the four selected topic categories there were more than ten reaudits reported

Table VIII

The Ten Most Frequently Audited Topic Categories in Classification C
(Administrative and Miscellaneous Procedures)

Topic-Related Category	Rank Period I (41 PSROs)	Rank Period II (56 PSROs)	Number of audits Period I (41 PSROs)	Number of audits Period II (56 PSROs)	Percent of total in classification Period I (41 PSROs)	Percent of total in classification Period II (56 PSROs)	TOTAL, (1975 and 1976)	
							Number of audits	Percent of all in classification C
Emergency Room	1	1	16	46	23.2	23.4	62	23.3
Patient Admissions, Transfer, Discharge	2	2.5	8	22	11.6	11.2	30	11.3
Antibiotics	4	2.5	5	22	7.2	11.2	27	10.2
Blood, Usage & Transfusions	5	4	4	18	5.8	9.1	22	8.3
Laboratories	3	5	7	9	10.1	4.6	16	6.0
X-Ray	--	6	--	8	--	4.1	8	3.0
Length of Stay	6	8.5	3	4	4.3	2.0	7	2.6
Intermittent Positive Pressure Breathing	--	7	--	6	--	3.0	6	2.3
Shock Therapy	--	8.5	--	4	--	2.0	4	1.5
Physical Therapy	--	10	--	3	--	1.5	3	1.1
TOTAL			43	142	62.2	72.1	185	69.6

Table IX

The Number of PSROs Reporting Completed Studies. The Number of Studies Reported Completed, the number of Reported Studies Submitted for Evaluation and the Number of Studies Found Acceptable for Evaluation

Topic Category	Number of PSROs Reporting Studies Completed Through Reaudit	Number of Studies Reported Completed Through Reaudit	Number of Completed Studies Submitted for Evaluation	Number of Studies Found Acceptable For Evaluation
Myocardial Infarction	15	29	25	23
Pneumonia	8	18	12	11
Cholecystectomy	11	14	12	7
Appendectomy	8	17	16	12

completed. While all of those reported completed were not submitted to the contractor, more than ten studies were submitted for all the topic categories. The reasons the PSROs had for not submitting studies were varied but primarily fell into two categories. Either the study had been reported inaccurately and was not actually a completed MCE study or the PSROs were unable or unwilling to encourage the hospitals which performed the studies to submit the necessary data. Less frequently, it was found that while a reaudit had been completed, the initial audit had been performed prior to binding review and the PSROs did not have legal access to that part of the requisite information.

Although an adequate number of studies was submitted, it was found that some of these studies were not acceptable because requested material had not been included or the material included was not complete enough to allow the contractor to proceed with the evaluation. In total, requests for data were made of twenty-four PSROs, most of whom were quite cooperative in terms of locating and forwarding data and in terms of answering questions about the materials submitted.

Once the contractor received the material necessary for completing the evaluation of a particular study, notation of this fact was made and the PSROs were sent a letter thanking them and their hospitals for the cooperation they extended during the study.

Data Processing and Analysis

At the time that a study was submitted to the contractor, a research assisstant and a senior analyst reviewed all the material available relevant to the study and either logged it in as ready for analysis or prepared a list of questions about the material and/or additional materials needed. Questions and requests for additional material were handled directly with the PSROs by telephone. These contacts were made either by project staff or, in situations where the PSROs were less than cooperative, by the project officer.

A file was prepared for each study which included all available materials relating to the complete study and all the necessary forms for abstracting and scoring the data. Files were then sent to a five-person team which included a physician, a publich health specialist, a senior analyst and two specially trained research assistants. Senior members of the team reviewed and analyzed the data and gave each study an impact score based on a system to be described. At least two senior team members and occasionally three reviewed each study. Where disagreements about scoring occurred consensus was reached after careful discussion and re-review of the material. Scores, therefore reflect agreement among senior staff from the fields of medical care and medical care evaluation. According to prescribed procedures, the junior team members abstracted data for later collation and final analysis. The results of the impact scoring and data analysis appear in subsequent sections of this report.

The abstracting, analysis and scoring of the studies was done according to three systems developed by the contractor under the terms of previous contracts and for the purpose of this evaluation.

The impact score given each study consisted of the combination of a first level analysis score based on an assessment of satisfactory completion of the elements of the MCE audit process, and an impact score based on: the percentage of types of documented deficiencies removed by the time of reaudit; the percentage of recommended actions implemented by the time of reaudit; and the weighted differential potential impact of types of corrected deficiencies.

The elements of the impact score were weighted so that primary emphasis was placed on the removal of types of deficiencies in the medical care process or patient outcomes which were felt to have potential for major impact on patients' health status. Complete descriptions of the scoring systems are contained in Appendix A, First Level Analysis of Critical MCE Elements. Appendix B, Development and Specification of the Method of Application of An Impact Rating System for MCE Studies is also included at the end of the report. The forms used for abstracting and scoring data are included in Appendix C.

It is suggested that the reader review these materials. However, in terms of the subsequent material describing the evaluation of each of the four topic categories, it is important to note that the final impact scores were based on the distribution of a possible 40 points described in Table II.

As can be seen from a review of Table X, it is possible for a study to receive a score as high as 40. However, studies were considered acceptable, that is essentially well executed and demonstrating acceptable impact, if they received a score of at least 29.5. One way in which studies could obtain this minimally acceptable total score was if they received credit for at least 70% of the requisite process factors, 75% for implementing recommendations and 75% of the combined correction of all types of deficiencies and correction of types of major deficiencies.

However, an acceptable score could also be obtained if either or both the process factor score or the score for implementing recommendations was somewhat below the acceptable level. Of either or both the process factor score or the score for implementing recommendations was below an acceptable level, in order to obtain an overall acceptable score, more than 75% of the types of deficiencies found would have to have been corrected. It is felt that the correction of deficient medical care process or patient outcomes is by far the most important contribution of the MCE study. Therefore, even though process elements might not be quite adequate, a study could be considered acceptable if its results, that is the change in medical care process or patient outcomes, were adequate.

When the scoring process was complete, data was abstracted from the study materials and from the scoring analysis forms. This data provided the basis for the anecdotal summaries of studies of the four

Table X

Distribution of 40 Points by Scoring Factors, Maximum Possible Score, and Acceptable Score

Scoring Factor	Maximum Possible Score	Acceptable Score
MCE Process Factor	10	7
Implementation of recommended actions	10	7.5
Correction of types of deficiencies	10	15 *
Differential impact of types of corrected deficiencies	10	
Total	40	29.5

* Fifteen points is considered an acceptable score for the combination of scores for correction of types of deficiencies and score for differential impact of types of corrected deficiencies.

topic categories which appear subsequently in this report. A copy of the form used to abstract the data is included as Appendix C.

Data Validity

A number of problems with the data were encountered during the collection and analysis of studies. These problems fall into two major categories; those problems relating to availability of data and those relating to the specificity and quality of that data which was available.

In terms of availability of data, the most significant problem, as noted earlier, was the paucity of reaudits which had been reported completed by the PSROs. A small telephone survey indicated that the PSROs were behind in reporting or were reporting in a manner too inaccurate to be accepted by the PMIS processors. This indicates that, in fact, a greater level of reaudit activity is going on than is apparent from review of PMIS data outputs. The magnitude of this differential in actual and reported activity is unknown.

There are two other factors which are felt to contribute significantly to the low level of reaudit activity. The first factor relates to the lack of incentives for reaudit built into current MCE guidelines. A hospital is not given credit for an MCE study if the need for reaudit was identified, until the reaudit is completed. The full cycle may take more than 1 year to complete. Also, reaudits are not required unless the hospital decides the deficiencies are sufficiently important to warrant reaudit. It is easier for a hopsital to complete an audit to indicate that no reaudit is necessary and obtain credit quickly than for the hospital

to do a reaudit. The second factor contributing to the low level of reaudit activity relates to the fact that MCE review is always the last type of review to be implemented after a PSRO becomes conditional. Consequently, for many PSROs, not enough time has elapsed for much reaudit activity to have taken place. These factors are discussed more fully in earlier sections of this report.

In addition to the relatively small numbers of completed MCE studies available, it was difficult to obtain sufficient data about audits on which to base an evaluation decision for those studies which were completed. In some cases, materials were reported "missing" or "unavailable" or data were so incomplete as to be meaningless. The PSROs in many instances were wary of "stressing" their relationships with their hospitals by making "unusual" requests for data. In addition, even though all identifiers were to be deleted, there was concern about confidentially especially related to audits which included non-federally subsidized patients or to initial audits completed before th initiation of binding review.

While all of the above problems with the data were encountered to a greater or lesser extent, it was possible, through interpolation and by employing liberal scoring standards, to use much of the material submitted. Some of the studies submitted were complete, excellent in detail and apparently effective in bringing about significant positive change in deficient medical care process and patient outcomes. These studies could have received acceptable scores even with the use of much more stringent standards than those used for the present study. Most of the

studies evaluated indicate, at the very least, a good potential for effecting the type of change just described. Even those studies that required more liberal standards to pass, suffered mostly from inadequacy of documentation of the audit process, rather than from the medical care itself. With better documentation on the part of the hospitals and PSROs and with more time for the contractor to extract, or clarify and validate all of the available data, it is likely that more improvement of medical care process and of patient outcomes could have been demonstrated. Thus, it is possible to say that with all the above mentioned limitations, the data nevertheless indicate that the MCE study has potential as a tool for effecting positive change in deficient medical care process and patient outcomes.

4.3 Results from MCEs Performed in the Topic Category: MYOCARDIAL INFARCTION

Myocardial Infarction: Study Process

In terms of process factors relating to the implementation of MCE studies on myocardial infarction, the following characteristics are of note.

Validity and Specificity of Topic Selection:

Myocardial infarction was ranked eighth of the twenty most frequently audited MCE topic categories for its probability of elucidating removable problem areas.[1/] Half of the studies had reasonably specific topic titles and objectives. The situation specific reasons for selecting the topic ranged from high incidence and prevalence (6 studies) to perceived need for evaluation of the diagnosis and management procedures (1 study) and

1/ See Chapter 5, Table VI.

evaluation of the use of the cardiac care unit (1 study). Few studies contained indications of the method used for selecting the study topic.

Given these facts, it is possible to say that myocardial infarction is a validly selected topic in that audits correcting deficient practice or outcome have significant potential for positive impact on patient health status. In addition, there were good situation specific reasons for selecting the topic in the hospitals whose audits were under consideration.

Locus of Study Responsibility and Personnel Involvement:

Hospital medical audit committees were responsible for 5 of the studies, while PSRO Regional Audit Committees were responsible for the other 5 studies. Five initial audits were conducted on a region-wide basis and 5 were conducted by individual hospitals. All reaudits were conducted by individual hosptials.

Six of the studies submitted contained no documentation of non-physician participation, 3 studies had no non-physician participation and one had a RRA Health Record Analyst involved. For all of the audits and reaudits submitted, a range of 1 to 120 non-physician hours were utilized with a median of 17 1/2 hours and a mean of 27 hours being utilized. The number of physician hours utilized ranged from 1 to 45 with a median of 5 hours and a mean of 9 hours utilized.

Audit Format and Criteria Selection:

All of the studies were based on a retrospective collection of data. Five of the studies used the standard JCAH/PEP audit format while

5 of the studies used special PSRO audit formats. Six of the studies used regionally generated criteria, 2 of the studies employed self-generated criteria and 2 of the studies used criteria generated by national organizations. The number of criteria elements employed for audits and reaudits ranged from 6 to 33 with a mean of 15 and a median of 13 criteria utilized. Six of the reaudits used all of the criteria while 4 of the reaudits employed a subset of criteria using only those for which deficiencies had been documented during the initial audit. Written lists of criteria elements were submitted for all studies evaluated and written or verbal lists of standards were submitted for all studies evaluated.

Sampling Characteristics:

The procedures used for sampling charts varied from "the selection of the last 50 cases" to selection of "all cases with a diagnosis of myocardial infarction" for periods of time ranging from 2 months to 14 months. The sample of charts for most of the audits and reaudits were consecutive cases selected over a period of 4 to 6 months.

The sample size for audits and reaudits also varied quite considerably from 20 charts to 72 charts, with a median of 41 charts and a mean of 39 charts. Documentation indicated that all studies included patients of both sexes and of all ages. Specific age ranges were not indicated. Additionally, in terms of sampling characteristics, the audits and reaudits varied in the number of physicians audited from 4 to 38 with a median of 7 and a mean of 11.3 physicians audited.

Myocardial Infarction: Study Results

As noted earlier in this report, this evaluation was designed to look at the results of MCE studies as well as at the process of their implementation. The final impact scores include both process and result factors. The results of the sample of myocardial infarction studies will be aggregated for discussion.

Table XI consists of a tabulation of the overall process and impact scores which were given to 10 of the 25 myocardial infarction studies evaluated during this study. The 10 studies selected for discussion here consist of those studies which were evaluated as having been implemented in the most rigorous way and which appeared to have brought about the most substantial amounts of change.

As Table XII indicates, although one of the studies received a score for elimination of deficiencies which was slightly below acceptable (14.8 vs. 15), all the studies being considered here were given overall scores above the threshold level of acceptability (29.5 points). The final impact scores ranged from 34.8 to 40. Documentation that recommended actions had been implemented was absent from almost all material received for all studies considered during this evaluation. However, careful review of audit notes and correspondence frequently allowed the assumption to be made that the actions had been implemented. Therefore, it was decided that because, at this point in time, the hospitals uniformly appear not to be meeting the requirements (22.8) that actual implementation of recommended actions be documented, and because the assumption often could be made that actions had been implemented, the full 10 points would be given every study evaluated.

As review of Exhibit I shows, an analysis of deficiencies indicated that the 10 studies highlighted 15 separate categories of deficiencies. Of these categories, 8 related to deficiencies in process of a clinical nature, 6 related to deficiencies in process having to do with adequate or appropriate documentation and 1 related to a deficiency in the area of patient care outcomes. Of the 15 categories of deficiencies 5, or 33%, were found to occur in more than 1 study. Of these 5 categories of deficiencies, 1 was found in 7 of the studies, 2 in 6 of the studies, 1 in 5 of the studies, and 1 in 3 of the studies. The most frequently occurring category of deficiencies was that of failure to admit patients to the CCU while the next most frequently occuring categories of deficiencies were failure to electronically monitor patients, the occrrence of unjustified mortality, and failure to maintain I.V. lines. Of the total number of categories of deficiencies, 9 or 60% were considered to be major. In other words, occurrence of these deficiencies had potential for directly negatively affecting patients' outcomes for the given episode of illness or perhaps ultimately in terms of their health status.

The extent (percentage of non-compliance with standard) to which categories of deficiencies were elucidated during the initial audit varied from 2% to 100%. The extent to which the same deficiencies were found during the reaudit varied from 0% to 28%. The change in extent of deficient process and outcomes of medical care represented by the decrease in deficiency from initial to reaudit is substantial. The percentage change varied from 0% to 100% with an overall mean change of 86%, a consistently high level of change. As noted earlier, the level of change was considered

Table XI. Distribution of Process and Impact Scores For Ten Myocardial Infarction Studies

Total Score (Matched Process and Impact Scores)				Acceptable Study Score	
TOTAL	Proc.	Imple. of Rec.	Elim. of Def.	YES	NO
40	10	10	20	+	
40	10	10	20	+	
39.5	8.5	10	20	+	
39	9	10	20	+	
39	9	10	20	+	
39	9	10	20	+	
38.5	8.5	10	20	+	
37.5	7.5	10	20	+	
37.2	10	10	17.2	+	
34.8	10	10	14.8	+	

Total Studies Graded: 10

Table XII: Frequency Distribution of Primary Types of Recommended Action

Type of Action	Frequency of Recommendation
Practitioner counseling	18
Educational programs	11
Staff meeting	6
Letter to medical staff	3
Monitoring of specific physicians' charts	2
Revision of criteria	2
Administrative change	1
TOTAL	43

Exhibit 1: Distribution of Deficiencies Found in Ten Myocardial Infarction Studies

Category of Deficiency	Overall Classification of Deficiency* PC	PO	PCO	Designation of Deficiency major: M minor: m	Number of Studies in Which Deficiency Occurred	Percent Extent of Unjustified Deficiency in Initial Audit Range	Mean	Percent Extent of Unjustified Deficiency in Re-Audit Range	Mean	Percent Change in Deficiency Range	Mean	Acceptable Level of Change Yes	No
Failure to admit patient to CCU	X			M	7	2-1	46.1	0-17	4.8	84-100	96.1	X	
Late or no electronic monitoring of patient	X			M	6	12.1-50	22.9	0-14	3.6	72-100	90.8	X	
Failure to document patient on monitor within 30 minutes		X		M	1	24	24	8	8	67	67	X	
Failure to maintain I.V. line		X		M	5	14.5	24.2	0-10	3.5	50-100	66.4	X	
Failure to document patient on I.U. within 30 minutes		X		M	1	26	26	7	7	73	73	X	
Failure to obtain EKG on admission	X			m	1	6	6	0	0	100	100	X	
Errors in EKG interpretation	X			M	1	20	20	0	0	100	100	X	
PVC's but no Rx	X			M	1	8	8	0	0	100	100	X	
Failure to repeat enzyme studies in instances of elevated enzymes	X			M	1	2	2	0	0	100	100	X	
Failure to obtain urine analysis	X			M	1	10	10	8	8	20	20	X	
No chest X-ray report in charts		X		m	1	10	10	0	0	100	100	X	
No EKG during last week documenting improvement	X			m	1	2	2	0	0	100	100	X	
Failure to document patient ambulatory		X		m	1	2	23	12.5	12.5	46	46	X	
Inadequate documentation of discharge instructions		X		m	3	10-36	28.6	16-28	20.6	0-53%	17.6	x(1)	x(2)
Mortality			X	M	6	15-25	22	0-8	1.3	67-100	94.5	X	

* PC: Process/Clinical
PO: Process/Documentation
PCO: Patient Care Outcome

acceptable in 90% of the studies. In no case was a negative change or increase in deficiency documented in the reaudit.

Review of the studies indicated that for every category, the deficiencies in medical care process and outcome were attributed to groups of physicians. In a few situations, particularly those relating to problems of documentation and availability of CCU beds, deficiencies also were attributed to hospital administration.

Seven major types of educational and/or remedial interventions were recommended as a result of findings during the initial audit. Table consists of a frequency distribution of these recommended actions.

For all the instances of deficient medical care process or outcome in all of the studies evaluated, 43 recommendations for educational interventions or remedial actions were made. Sixty-seven percent of these recommendations involved two types of action, practitioner counseling and educational programs. Fifty-three percent of the actions were ones applicable to all physicians involved in the treatment of myocardial infarction, while 47% of the actions were applicable to those physicians directly responsible for the deficient practice or outcomes.

In summary, the results of an evaluation of 10 MCE studies on myocardial infarction are indicative of two basic points. All the studies evaluated (highest scores were selected) received acceptable process scores and 90% received acceptable impact scores indicating that, given the fairly liberal standards for grading, it appears that these studies were conducted in a reasonably rigorous manner and resulted in sufficient change, i.e., reduction, in deficient medical care process or outcome.

The results of initial myocardial infarction audits and the proximate results or positive change demonstrated by reaudit which have been discussed in this section underscore the potential that the MCE study

has for revealing removable problem areas relating to medical care process and outcome. Large portions of these problems areas have been ameliorated, as is evidenced by the correction of more than half of the discovered deficiencies.

4.4 Results from MCEs Performed in the Topic Category: PNEUMONIA

Pneumonia: Study Process

In terms of process factors relating to the implementation of MCE studies on pneumonia, the following characteristics are of note.

Validity and Specificity of Topic Selections:

Pneumonia was ranked fourth of the twenty most frequently audited MCE topic categories for its probability of elucidating removable problem areas.[1/] Four of the pneumonia studies had reasonably specific topic titles and objectives, while the situation specific reasons for selecting the topic ranged from incidence/prevalence (3 studies) to need to complete an audit (1 study) and preventable morbidity/mortality (1 study). Given these facts, it is possible to say that pneumonia is a validly selected topic in that audits correcting deficient practice or outcomes have significant potential for positive impact on patient health status. In addition, there were acceptable situation specific reasons for selecting the topic in the hospitals whose audits were under consideration.

Locus of Study Responsibility and Personnel Involvement:

Hospital medical audit committees were responsible for 3 of the studies, the medical service in hospitals was responsible for 2 studies

and 5 studies were conducted by PSROs as part of regional audits.

Two of the studies submitted contained documentation that there had been no non-physician participation. 5 studies had PSRO personnel involved, 2 studies had nurses involved, 1 study had a medical audit assistant involved and 1 study had other medical reocrds personnel involved. For 4 audits and reaudits which contained data about person hours utilized, there was a range of 2 to 33 1/2 non-physician hours reported utilized with a mean of 19.3 hours and a median of 24 hours being utilized. The number of physician hours for audit and reaudits ranged from 1/2 to 30 hours with a mean of 8.8 hours and a median of 5.5 hours being utilized.

The sample size for audits and reaudits also varied quite considerably from 10 charts to 50 charts, with a mean of 23.5 charts and a median of 22.5 charts. Documentation indicated two studies were of pediatric populations, 7 were of all ages and one other had no accompanying age range data.

Audit Format and Criteria Selection:

All of the studies were based on retrospective collection of data. Four of the studies used the standard JCAH/PEP Audit format, while 5 of the studies used PSRO audit formats and 1 stucy used a derivation of a nationally used format. Five of the studies used regionally generated criteria, 3 of the studies employed self-generated criteria, 1 of the studies used criteria generated by another PSRO and the remaining study used criteria generated by a national organization. The number of criteria elements employed for audits and reaudits ranged from 8 to 23, with

a mean of 11.8 and a median of 11. Four of the reaudits used all of the criteria, while 6 of the reaudits employed a subset of criteria using only those for which deficiencies had been documented during the initial audit. Written lists of criteria elements were submitted for all studies evaluated and written or verbal lists of standards were submitted for all studies evaluated.

Sampling Characteristics:

The procedures used for sampling charts varied from the "selection of the last 50 cases" to "selection of all cases with a diagnosis of pneumonia" for periods of time ranging from 1 month to 1 year. The sample of charts for most of the audits and reaudits consisted of consecutive cases selected over a period of 1 month to 1 year. The sample size for audits and reaudits also varied considerably from 10 charts to 50 charts, with a median of 38 and a mean of 34. Documentation indicated that studies included patients of both sexes and all ages. Additionally, in terms of sampling characteristics the audits and reaudits varied in the number of of physicians audited from 2 to 14 with a median of 6 and a mean of 5.4 physicians audited.

Pneumonia: Study Results

As noted earlier in this report, this evaluation was designed to look at the results of MCE studies as well as at the process of their implementation. The final impact scores include both process and result factors. The results of the sample of pneumonia studies will be aggregated

in this section for discussion.

Table XIII consists of a tabulation of the overall process and impact scores which were given to 10 of the 11 studies evaluated during this study. The 10 studies selected for discussion here consist of those studies which were evaluated as having been implemented in the most rigorous way and which appeared to have brought about the most substantial amounts of change. As Table XIII indicates, only four of the studies being considered here were given scores above the threshold level of acceptability (29.5 points). The final impact scores ranged from 19 to 40 with a mean score of 30.1 and a median of 27.8. The process scores contributing to these scores ranged from 8 to 10 with a mean score of 9 and a median score of 9.2. The score for implementation of recommendations was automatically 10 points and the range of scores for elimination of types of deficiencies ranged from 0 to 20 points, with a mean score of 11.1 points and a median score of 9.5 points. Six studies received scores for elimination of deficiencies which were below threshold (15 points) and in these cases the variation from threshold was from 5 to 15 points. In two studies, there was no documentation at all of a satisfactory decrease in the level of deficiency.

A summary review of Table XIII indicates that only 40% of those studies considered here eliminated acceptable levels of types of deficiencies for all the criteria which were found deficient during the initial audit and which were reaudited. As review of Exhibit II shows, an analysis of deficiencies indicates that the 10 studies highlighted 12 separate

Table XIII: Distribution of Process and Impact Scores for Ten Pneumonia Studies

Total Score (Matched Process and Impact Socres)				Acceptable Study Score	
TOTAL	Proc.	Imple. of Rec.	Elim. of Def	YES	NO
40	10	10	20	+	
40	10	10	20	+	
40	10	10	20	+	
39	9	10	20	+	
28.8	8.8	10	10		-
26.8	8.5	10	8.3		-
24	7	10	7		-
23.3	8	10	5.3		-
20	10	10	0		-
19	9	10	0		-

Total Studies Graded: 10

Exhibit II: Distribution of Deficiencies in Ten MCE Pneumonia Studies

Category of Deficiency	Overall Classification of Deficiency			Designation of Deficiency Major: M. Minor: m	Number of Studies in Which Deficiency Occurred	Percent Extent of Unjustified Deficiency in Initial Audit		Percent Extent of Unjustified Deficiency in Re-Audit		Percent Change in Deficiency		Acceptable Level of Change	
	PC	PD	PCD			Range	Mean	Range	Mean	Range	Mean	Yes	No
No positive X-ray diagnosis	X			M	3	6-20	10.3	0	0	100	100	+	
No positive X-ray plus respiratory distress of inability to code out of hospital as indicators for admission	X			M	1	27	27	No data		No data		No data	
No positive culture for pathogens	X			M	7	28-02.6	49.2	0.71	30.7	-34 -+100	32.4	X	X(4)
No blood pressure and weight taken on admission	X			m	1	19	19	24	24	-20	-20		X
No documentation of clinical improvement		X		m	3	14-50	32-6	0-30.6	17.9	-21 -+82	33	X(1)	X(2)
No documentation of clinical impression of pneumonia		X		m	1	37.5	37.5	0	0	100	100	X	
Antibiolic therapy in absence of bacterial investigation	X			M	4	37.5-44	40.4	27.64	48.2	-55+30	-12.5		X
Repeated X-ray demonstrating improvement	X			M	2	40-57	49	18-24	21	40-68	54	X(1)	X(1)
Length of stay outside of norms	X			m	1	4	4	0	0	0	0	X	
Patients not afebrile for 48 hours prior to discharge	X			M	1	8	8	0	0	0	0	X	
No resolved or clearing X-ray at discharge	X			M	1	48	48	0	0	0	0	X	
No documentation of follow-up at discharge		X		m	4	12-81.3	38.8	0-23.1	10	-42+100	32.6	X(3)	X(1)

categories of deficiencies. Of these categories, 9 related to deficiencies in process of a clinical nature, while 3 related to deficiencies in process having to do with adequate or appropriate documentation. Unjustified mortality or other deficiencies related to patient care outcomes were not disclosed by these audits. Of the 12 categories of deficiency, 6, or 50% were found to occur in more than 1 study. Of these 6 categories of deficiency 1 was found in 7 of the studies, 2 in 4 of the studies, 2 in 3 of the studies and 1 in 2 of the studies. The most frequently occurring category of deficiencies was that of failure to obtain positive sputum cultures while the next most frequently occurring categories of deficiencies were failure to document plan of follow-up, the use of antibiotic therapy in the absence of bacterial investigation, failure to document clinical improvement in patients, no positive X-ray diagnosis and failure to obtain repeated X-rays to demonstrate clinical improvement. Of the total number of categories of deficiencies, 6, or 50% were considered to be major. In other words, occurrence of these deficiencies had potential for negatively affecting patients' outcomes for the given episode of illness or perhaps ultimately in terms of their health status.

The extent (percentage of non-compliance with standard) to which categories of deficiencies were revealed during the initial audit varied from 4% to 81.3%. The extent to which the same deficiencies were found during the reaudit varied from 0% to 71%. The change in extent of deficient process or outcomes of medical care represented by the decrease in deficiency from initial to reaudit is substantial. The percentage

change varied from -56% (negative change) to +100%. As noted earlier, the level of change was considered acceptable in only 40% of the studies. In 6 situations, negative changes or increases in deficiency were documented in the reaudit.

Review of the studies indicated that for every category, the deficiencies in medical care process and outcome were attributed to groups of physicians.

Five major types of educational or remedial interventions were recommended as a result of findings during the initial audit. Table XIV consists of a frequency distribution of these recommended actions.

Table XIV: Frequency Distribution of Primary Types of Recommended Action

Type of Action	Frequncy of Recommendation
Letter to medical staff	19
Practitioner counseling	5
Staff meeting	1
Revision of criteria	1
Administrative change	1
TOTAL	27

For all instances of deficient medical care process or outcome in all of the studies evaluated, 27 recommendations for educational interventions or remedial actions were made. Seventy percent of these recommendations involved one type of action, letters sent to medical staff regarding the problems. Eighty-one percent of the actions were ones applicable to all physicians involved in the treatment of pneumonia while 19% of the actions were applicable to those physicians directly responsible for the deficient practice or outcomes.

In summary, the results of an evaluation of 10 MCE studies on pneumonia are indicative of two basic points. Only 4 of the studies evaluated (highest scores were selected) received acceptable process and impact scores indicating that, given the fairly liberal standards for grading, it appears that while these studies were conducted in a reasonably rigorous manner, this did not result in sufficient change, i.e., reduction in deficient medical care process or outcomes in more than one half of the situations.

The results of initial pneumonia audits and the proximate results underscore the potential the MCE study has for disclosing removable problem areas relating to medical care process and outcomes. The studies evaluated here also show potential for producing positive change by eliminating deficiencies.

4.5 Results from MCEs Performed in the Topic Category: APPENDECTOMY:

In terms of process factors relating to the implementation of MCE studies on appendectomy, the following characteristics are of note.

Validity and Specificity of Topic Selection:

Appendectomy was ranked first of the twenty most frequently audited MCE topic categories for is probability of elucidating removable problem areas. 1/

Three of the ten studies had reasonably specific topic titles and objectives. The situation specific reasons for selecting the topic ranged from high incidence and prevalence (6 studies) to perceived need for evaluation of the performance and mangement of appendectomy (1 study), general interest in the topic (6 studies) and finally, concern over the frequency of removal of normal appendices (1 study). Few studies contained indications of the method used for selecting the study topic.

Given these facts, it is possible to say that appendectomy is a validly selected topic in that audits correcting deficient practice or outcome have significant potential for positive impact on patient health status. In addition, there were good situation specific reasons for selecting the topic in the hospitals whose audits were under consideration.

Locus of Study Responsibility and Personnel Involvement

PSRO Regional Audit Committees were responsible for 7 of the studies, Medical Audit Committees were responsible for 2 of the

1/ See Chapter 5, Table XVIII

studies and finally, a department of surgery was responsible for 1 of the studies. All 10 of the initial audits were conducted by individual hospitals. This was also true for reaudits.

Four of the studies submitted contained no documentation of non-physician participation, and 6 had a Medical Audit Assistant involved. For all of the studies including audits and reaudits which submitted information on person hours, a range of 2 to 30 non-physician hours were utilized with a median of 8 hours and a mean 11.5 hours being utilized. The number of physician hours for audits and reaudits range from 1 to 7 with a median of 2 and a mean of 2.6 hours utilized.

Audit Format and Criteria Selection

All of the studies were based on a retrospective collection of data. Four of the studies used the standard JCAH/PEP audit format while 6 of the studies used special PSRO audit formats. Seven of the studies used criteria generated by PSRO Regional Audit Committees, 2 of the studies employed self-generated criteria and 1 of the studies did not submit information as to how the criteria were generated.. The number of criteria elements for both audits and reaudits ranged from 1 to 25 with a median of 10 and a mean of 8 utilized. Two of the reaudits used all of the criteria, and 8 used a subset of criteria using only those criteria for which deficiencies had been documented during the initial audit. Written lists of criteria elements and standards were submitted for all studies evaluated.

Sampling Characteristics

The procedures used for sampling charts for audits and reaudits varied from the "selection of the last 50 or 100 cases" to "selection of all appendectomy cases" for periods of time ranging from 6 months to 2 years.

The sample size for audits and reaudits also varied considerably from 2 charts to 100 charts with a median of 48 charts and a mean of 43. Documentation indicated that all studies included patients of both sexes and all ages. Specific age ranges were not indicated. Additionally, in terms of sampling characteristics, the studies, including the audit and reaudit varied in the number of physicians audited from 1 to 16 with a median of 2.5 and a mean of 5.6 physicians audited.

Appendectomy: Study Results

As noted earlier in this report, this evaluation was designed to look at the results of MCE studies as well as at the process of their implementation. The final impact scores include both process and result factors. The results of the sample of appendectomy studies will be aggregated in this section for discussion.

Table XV consists of a tabulation of the overall process and impact scores which were given to 10 of the 12 appendectomy studies evaluated during this study. The 10 studies selected for discussion here consist of those studies which were evaluated as having been

implemented in the most rigorous way and which appeared to have brought about the most substantial amounts of change of all the studies evaluated in this topic area. As Table XV indicates, eight of the studies being considered here were given scores above the threshold level of acceptability (29.5 points). The final process scores ranged from 5.5 to 9 with a mean score of 7.7 and a median score of 8. The score for implementation of recommendations was automatically 10 points and the range of scores for elimination of types of deficiencies ranged from 6.6 to 20 points, with a mean score of 17.7 and a median score of 20 points. Only two studies received a score for elimination of deficiencies which was below threshold (15 points). A summary view of Table XV indicates that only 80% of those studies considered here eliminated an acceptable level of types of deficiencies found during initial audits for all the criteria which were reaudited. The types of deficiencies reaudited and documented as eliminated will be discussed in following paragraphs. While only studies receiving high impact scores are considered here, the fact of note is that review of those studies indicates that MCE study is a valuable tool for correcting areas of deficient medical process and patient outcomes even when the study process itself is somehwat less than ideal.

As review of Exhibit III shows, an analysis of deficiencies indicates that the 10 studies highlighted 9 separate categories of deficiencies. Of these categories 5 related to deficiencies in process of clinical nature, 2 related to deficiencies in process having to do with adequate or appropriate documentation and 2 related to deficiencies in

Table XV: Distribution of Process and Impact Scores For Ten Appendectomy Studies

Total Score (Matched Process and Impact Scores				Acceptable Study Score	
TOTAL	Proc.	Imple. of Rec.	Elim. of Def.	YES	NO
39	9	10	20	+	
39	9	10	20	+	
39	9	10	20	+	
38	8	10	20	+	
38	8	10	20	+	
38	8	10	20	+	
37	7	10	20	+	
36	6	10	20	+	
27.5	7.5	10	10		-
22.1	5.5	10	6.6		-

Exhibit III: Distribution of Deficiencies Found in Ten Appendectomy Studies

Category of Deficiency	Overall Classification of Deficiency			Designation of Deficiency Major: M Minor: m	Number of Studies in Which Deficiency Occurred	Percent Extent of Unjustified Deficiency in Initial Audit		Percent Extent of Unjustified Deficiency in Re-audit		Percent Change in Deficiency		Acceptable Level of Change	
	PCI	PD	PCO			Range	Mean	Range	Mean	Range	Mean	Yes	No
Did not meet criteria for justified admission	X			m	1	2	2	0	0	100	100	+	
Surgery not justified by Sufficient signs and symptoms			X	M	3	1.5-16	10	0-1.5	2.8	70-100	80.6	+(3)	
Gangrenous or perforated appetullx			X	m	1	4	4	0	0	100	100	+	
Routine Chest X-ray not done	X			M	1	1.5	1.5	0	0	100	100	+	
Not on regular diet with normal bowel function at discharge	X			M	1	53	53	0	0	100	100	+	
Discharge documentation deficiency: full diet		X		m	1	21	21	0	0	100	100	+	
Patient did not receive home care orders	X			M	1	100	100	20	20	80	80	+	
Failure to document wound status at discharge		X		m	8	12-70	37.4	0-50	16.6	20-100	85	+(6)	-(2)
Length of stay	X			m	1	1	1	0	0	100	100	+	

the area of patient care outcomes. Of the 9 categories of deficiencies 2, or 22% were found to occur in more than 1 study. Of these 2 categories of deficiencies, 1 was found in 8 of the studies, and 1 in 3 of the studies. The most frequently occurring category of deficiency was that of failure to document wound status at discharge while the next most frequently occurring category of deficiency was surgery not justified by sufficient signs and symptoms. Of the total number of categories of deficiencies, 4 or 44% were considered to be major. In other words, occurrence of those deficiencies had potential for directly negatively affecting patients' outcomes for the given episode of illness or perhaps ultimately in terms of their health status.

The extent (percentage of non-compliance with standard) to which categories of deficiencies were elucidated during the initial audit varied from 1% to 100%. The extent to which the same deficiencies were found during the reaudit varied from 0% to 50%. The change in extent of deficient process and outcomes of medical care represented by the decrease in deficiency from initial audit to reaudit is substantial. The percentage change varied from 20% to 100% with an overall mean change of 84%, a consistently high level of change. As noted earlier, the level of change was considered acceptable in 80% of the studies. In no case was a negative change or increase in deficiency documented in the reaudit.

Review of the studies indicated that for every category, the deficiencies in medical care process and outcomes were attributed

either to groups of physicians or an individual physician. In a few situations, particularly those relating to problems of documentation, deficiencies also were attributed to hospital administration or nurses.

Five major types of remedial intervention were recommended as a result of the findings during the initial audit. Table XVI consists of a frequency distribution of these recommended actions.

For all the instances of deficient medical care process or outcomes in all of the studies evaluated, 24 recommendations for remdial actions were made. Twenty-nine percent of these recommendations involved practitioner counseling. All of the actions were ones applicable to all physicians involved in the treatment of appendectomy.

In summary, the results of an evaluation of 10 MCE studies on appendectomy are indicative of two basic points. Eight of the studies evaluated (highest scored were selected) received acceptable process and impact roles suggesting that, given the fairly liberal standards for grading, it appears that these studies were conducted in a reasonably rigorous manner and resulted in sufficient change, i.e., reduction, in deficient medical care process or outcomes.

The results of initial appendectomy audits and the proximate results or positive change deomonstrated by reaudit which have been discussed in this section underscore the potential that the MCE study has for disclosing removable problem areas relating to medical care process and outcome. These studies also showed the ability to ameliorate these problem areas.

Table XVI: Frequency Distribution of Primary Types of Recommended Action

Type of Action	Frequency of Recommendation
Practitioner Counseling	7
Revision of Criteria	6
Staff Meeting	5
Administrative Change	3
Monitoring of Charts	3
TOTAL	24

4.6 Results from MCEs performed in the Topic Category: CHOLECYSTECTOMY

Cholecystectomy: Study Process

In terms of process factors relating to the implementation of MCE studies on cholecystectomy, the following characteristics are of note.

Validity and Specificity of Topic Selection

Cholecystectomy was ranked third of the twenty most frequently audited MCE topic categories for its probability of elucidating removable problem areas.[1/]

Three of the 7 cholecystectomy studies analyzed had reasonably specific topic titles and objectives; the situation specific reasons for selecting the topic ranged from incidence/prevalence (5 studies) to preventable morbidity/mortality (1 study). The method used for selecting the topic of 2 of the cholecystectomy studies was profile analysis. For 2 other studies the method was analysis of medicial records and for an additional study "physician interest" was listed for method of selection.

Given these facts, it is possible to say that cholecystectomy was a validly selected topic in that audits correcting deficient practice or outcome have significant potential for positive impact on patient health status. In addition there were acceptable situation

1/ See Chapter 5, Table XVIII

specific reasons for selecting the topic in the hospitals whose audits were under consideration.

Locus of Study Responsibility and Personnel Invovlement

Hospital medical audit committees were responsible for 3 of the studies, the surgical service in hospitals was responsible for 2 studies, the UR Committee for the 6th and the hospital medical staff for the remaining study.

Two of the studies submitted contained documentation that there had been no non-physician participation; 2 had medical records personnel involved. However, for the 6 studies including audit and reaudit which contained data about person hours utilized, there was a range of 2 to 48 non-physician hours reported utilized with a mean of 19 hours and a median of 19 hours being utilized. The number of physician hours ranged from 1 to 13 hours with a mean of 5.5 hours and median of 5.25 hours being utilized for the audits and reaudits involved in the six studies for which person hours were reported.

The sample size for both audits and reaudits also varied quite considerably from 18 charts to 82 charts, with a mean of 35.5 charts and a median of 30.5 charts. Documentation indicated all studies had populations covering all ages and both sexes.

Audit Format and Criteria Selection:

All of the studies were based on retrospective collection of data. Four of the studies used the standard JCAH/PEP Audit format,

while 2 of the studies used PSRO audit formats and 1 study used a derivation of a nationally used format. Two of the studies employed self-generated criteria, 2 used criteria from other hospitals, 1 of the studies used criteria generated by another PSRO and another used criteria generated by a national organization. The number of criteria elements employed for both audits and reaudits ranged from 1 to 27, with a mean of 13.6 and a median of 13.0. Four of the reaudits used all of the criteria, while 3 of the reaudits employed a subset of criteria using only those for which deficiencies had been documented during the inital audit. Written lists of criteria elements were submitted for all studies evaluated and written or verbal lists of standards were submitted for all studies evaluated.

Sampling Characteristics

The procedures used for sampling charts for both audit and reaudit varied from the "selection of the last 50 cases" to "selection of all cases with a diagnosis of cholecystectomy" for periods of time ranging from 6 months to 1 year. In 6 of the studies, the sample of charts for these audits and reaudits included consecutive cases selected over a period of 6 months to 1 year. In the seventh case, a random sample of 50 charts was taken out of a total population of 87, over one year's time.

Cholecystectomy: Study Results

As noted earlier in this report, this evaluation was designed to look at the results of MCE studies as well as at the process of their implementation. The final impact scores include both process and result

factors. The results of the sample of cholecystectomy studies were aggregated in this section for discussion of the overall results.

Table XVII consists of a tabulation of the overall process and impact scores which were given to the seven cholecystectomy studies evaluated. Originally it had been the intent to review a greater number of studies and to select those which had been implemented in the most rigorous way and which appeared to have brought about the most substantial amounts of change. However, data for only seven studies (including reaudits) on this topic category could be obtained. It was, therefore, decided to include all seven in the analysis to provide a maximum data base. As Table XVII indicates, only four of the studies being considered here were given scores above the threshold level of acceptability (29.5 points). The final impact scores ranged from 18 to 39.5 with a mean score of 32 and a median of 33.2. The process scores contributing to these scores ranged from 7.5 to 9.5 with a mean score of 8.4 and a median score of 8. The score for implementation of recommendations was automatically 10 points and the range of scores for elimination of types of deficiencies ranged from 0 to 20 points, with a mean score of 13.5 points and a median score of 14.7 points. Four studies received scores for elimination of deficiencies which were below threshold (15 points) and in these cases the variation from threshold was from 0.3 to 15 points. In one study, there was no decrease in the level of the single deficiency which had been identified in the original audit.

A summary review of Table XVII indicates that 57% of those studies considered here eliminated or made acceptable progress in eliminating

Table XVII: Distribution of Process and Impact Scores for Seven Cholecystectomy Studies

Total Score (Matched Process and Impact Scores)				Acceptable Study Score	
TOTAL	Proc.	Imple. of Rec.	Elim of Def.	Yes	No
39.5	9.5	10	20	+	
39.5	9.5	10	20	+	
38	8	10	20	+	
33.2	8.5	10	14.7	+	
28	8	10	10		-
27.5	7.5	10	10		-
18	8	10	0		-

Total Studies Graded: 7

deficiencies for all the criteria which were reaudited. As review of Exhibit IV shows, an analysis of deficiencies indicates that the 7 studies elucidated 10 categories of problems. Of these categories, 5 related to deficiencies in process of a clinical nature, while 2 related to deficiencies in processes having to do with adequate or appropriate documentation; 3 related to deficiencies involving patient care outcomes. Of the 10 categories of deficiency 3, or 30% were found to occur in more than 1 study. Of these 3 categories of deficiency 1 was found in 3 of the studies and 2 in 2 of the studies. The most frequently occurring category of deficiencies was the failure to perform, or at least to record, pre-operative cholecystograms to confirm diagnosis prior to surgery. The other two deficiencies recorded in more than one study were failure to document satisfactory wound healing and failure to perform EKG's on indicated populations (patients over forty). Of the total number of categories of deficiencies 9, or 90%, were considered to be major. In other words, occurrence of these deficiencies had potential for directly negatively affecting patients' outcomes for the given episode of illness or perhaps ultimately in terms of their health status.

The extent (percentage of non-compliance with standard) to which categories of deficiencies were elucidated during the initial audit varied from 4% to 34%. The extent to which the same deficiencies were found during the reaudit varied from 0% to 25%. The change in extent of deficient process or outcomes of medical care represented by the decrease in deficiency from initial to reaudits is substantial.

Exhibit IV: Distribution of Deficiencies in Seven MCE Studies on Cholecystectomy Studies

Category of Deficiency	Overall Classification of Deficiency			Designation of Deficiency Major: M Minor: m	Number of Studies in Which Deficiency Occurred	Percent of Unjustified Deficiency in Initial Audit		Percent of Unjustified Deficiency in Re-audit		Percent Change in Deficiency		Acceptable Level of Change	
	PC	PD	PCO			Range	Mean	Range	Mean	Range	Mean	Yes	No
No record of pre-operative cholecystogram confirming diagnosis prior to operation	X			M	3	9-34	20.3	3-25	17.3	-33+67	20.3	X(1)	X(2)
No documentation that patient was tolerating diet		X		m	1	4	4	4	4	0	0		X
No positive Path Report			X	M	1	14	14	8	8	43	43	X (Above 90%)	
No satisfactory wound healing			X	M	2	22-33	27.5	0	0	100	100	X(2)	
Wound Dehiscience			X	M	1	12	12	0	0	100	100	X	
EKG's indicated but not done	X			M	2	14-22	18	0-12	0	15-100	57.5	X(1)	X(1)
Progress notes inadequate to justify variations		X		M	1	8	8	0	0	100	100	X	
Electrolyte Studies indicated but not done	X			M	1	6	6	0	0	100	100	X	
Fasting Blood Sugar levels abnormal	X			M	1	3	3	9	9	-300	300		X
Non-performance of operative Cholonglography	X			M	1	4	4	0	0	100	100	X	

PC: Process/Clinical
PD: Process/Documentation
PCO: Patient Care Outcome

The percentage change varied from -300% (negative change) to +100%. As noted earlier, the level of change was considered acceptable in only 57% of the studies. In 2 situations, negative changes or increases in deficiency for individual criteria were documented in the reaudit.

Review of the studies indicated that for all but one category, the lack of documentation that patient was tolerating normal diet, the deficiencies in medical care process and outcomes were attributed to groups of physicians. The category of deficiency relating to documentation of diet was attributed to nurses.

Six major types of educational or remedial interventions were recommended as a result of findings during the initial audit. Table XVIII consists of a frequency distribution of the recommended actions.

Table XVIII

Frequency Distribution of Primary Types of Recommended Action

Type of Action	Frequency of Recommendation
Letter to medical staff	4
Discussion by Audit Committe with medical staff	4
Practitioner counseling	4
Letters to individual physicians	2
Staff meeting, physicians	1
Staff meeting, nurses	1
TOTAL	16

For all instances of deficient medical care process or outcomes in all of the studies evaluated, 16 recommendations for educational interventions or remedial actions were made. Thirty seven percent of these recommendations involved one type of action: staff meetings at which deficiencies were brought to the attention of practitioners as a group either at regular medical staff meetings where the audit committee reported findings and deficiencies or at medical or nursing committee meetings where the audit results were reviewed. In 4 cases (25%), letters were sent to medical staff to inform them of the specific problem(s). In 6 cases (37%) remedial action was handled through individual counseling or letters to the practitioners involved.

In summary, an evaluation of 7 MCE studies on cholecystectomy reveals two basic points: all received acceptable process scores and 4 of the 7 received acceptable impact scores. This indicates, even with the liberal standards for grading, that these studies were conducted in a reasonably rigorous manner and that over half the studies resulted in acceptable action and reduction in deficient medical care or outcome.

The results of initial cholecystectomy audits and the proximate results i.e., positive or negative change demonstrated which have been discussed in this paper underscore the potential the MCE study has for revealing removable problem areas relating to medical care process and outcome.

4.7 Summary and Conclusions for Chapter 4

The preceeding subchapters have described an evaluation of the process and the proximate results of MCE studies in four topic categories. This section of the evaluation was completed for the purpose of obtaining a detailed examination of the effectiveness of the MCE as a tool for improving the quality of care.

As noted in the section on methodology, an attempt was made to review every existing completed MCE study which had been performed for four topic areas (myocardial infarction, pneumonia, appendectomy, and cholecystectomy). Given the time constraints of this study and the relatively small amount of restudy activity that has been implemented by the PSROs and their hospitals to date, it was possible to locate only a limited sample of studies which met the selection criteria for evaluation. Of 65 studies requested from and submitted by the PSROs, 53 studies contained sufficient data to permit evaluations by the impact rating system described in this report. The remaining 12 of the 65 studies submitted were not evaluated because they did not include sufficient material on which to base the necessary judgments. The distribution of studies evaluated is as follows:

Myocardial Infarction	- 23 studies
Pneumonia	- 11 studies
Cholecystectomy	- 7 studies
Appendectomy	- 12 studies

In terms of process, virtually all of the studies evaluated (35 of 37) received acceptable scores. However, as noted in the previous

sections, very liberal standards were applied in scoring on the study process criteria. If the study data received from the hospitals are representative of all audits conducted, clearly, the PSROs and the hospital could and should be encouraged to be more rigorous in their approach to designing, implementing, recording and interpreting audit results.

Additionally, as was also noted previously, hospital audit committees do not routinely document the implementation of recommended educational or remedial actions. It is felt that such documentation is of great importance in that it enables a hospital to determine, over time, what types of actions are the most effective relative to eliminating problem areas in medical care process or patient outcomes. For the purposes of this evaluation, given the lack of documentation, it was assumed, unless there was clear evidence to the contrary, that all recommended actions had been implemented. All studies were given acceptable scores for implementing actions related to identified problem areas in medical care process or patient outcomes.

In summary, while the studies evaluated received acceptable scores for process and implementation of actions, it was necessary to use relatively liberal standards. The MCE process and the documentation that recommended actions have been taken should be implemented more systematically and rigorously.

Though MCEs were at times lacking in terms of their process, the evaluation clearly indicates that MCEs can be successful in revealing and eliminating problem areas relating to the medical care process and to patient outcomes. Thus, while hospitals and PSROs may not always be carrying out the MCE process as rigorously as desired, those that are done well appear to have the desired results. The MCEs evaluated here demonstrated that they achieve two of the primary goals of the MCE component of the PSRO Program: 1) identifying problem areas in medical care process and patient outcomes where they exist; 2) removing or ameliorating these problem areas (reducing deficiency rates).

In the following 4 tables (XIX-XXII) the categories of deficiencies found for each of the four topics evaluated are organized by problem areas within medical care process and patient outcomes. The six areas include:

- Failure to complete routine hospital care
- Failure to provide adequate diseases specific care: Diagnostic
- Failure to provide adequate disease specific care: Treatment
- Inappropriate utilization
- Unjustified outcomes
- Failure to document adequately

Only a few problem areas disclosed during these studies were related to delivery of routine hospital care. Failure to complete such procedures as routine urine analyses, or chest x-rays, or the measuring

Table XIX

Categories of Deficiencies Found in Ten MCE Studies on Myocardial Infarction Organized by Problem Area

PROBLEM AREA	EXAMPLE OF DEFICIENCIES WITHIN PROBLEM AREA	NUMBER OF STUDIES IN WHICH DEFICIENCY OCCURRED	NUMBER OF CATEGORIES OF DEFICIENCIES WITHIN PROBLEM AREA
Failure to complete routine hospital care	Failure to obtain routine urine analysis	1	1
Failure to provide adequate disease specific care; diagnostic	Failure to obtain EKG on admission Errors in EKG interpretation Failure to repeat enzymes studies in instances of elevated enzymes No EKG during last week documenting improvement	1 1 1 1	4
Failure to provide adequate disease specific care: treatment	Failure to admit patient to CCU Late or no electronic monitoring of patient Failure to maintain I.V. line PVC's but no treatment	7 6 5 1	4
Inappropriate utilization	-	-	-
Unjustified outcomes	Mortality	6	1
Failure to adequately document	No chest x-ray report on charts Failure to document patient on monitor within 30 minutes Failure to document patient on I.V. within 30 minutes Failure to document patient ambulatory Inadequate documentation of discharge instructions	1 1 5 1 3	5

Table XX

Categories of Deficiencies Found in Ten MCE Studies on Penumonia Organized by Problem Area

PROBLEM AREA	EXAMPLE OF DEFICIENCIES WITHIN PROBLEM AREA	NUMBER OF STUDIES IN WHICH DEFICIENCY OCCURRED	NUMBER OF CATEGORIES OF DEFICIENCIES WITHIN PROBLEM AREA
Failure to complete routine hospital care	No blood pressure and weight taken on admission	1	1
Failure to provide adequate disease specific care: diagnostic	No positive x-ray diagnosis	3	4
	No positive x-ray plus respiratory distress or inability to cope out of hospital as indicators for admission	1	
	No positive culture for pathogens	7	
	No repeated x-ray demonstrating improvement	2	
Failure to provide adequate disease specific care: treatment	Antibiotic therapy in absence of bacterial investigation	4	3
	Patient not afebrile for 48 hours prior to discharge	1	
	No resolved or clearing x-ray at discharge	1	
Inappropriate utilization	Length of stay outside of norms	1	1
Unjustified outcomes	-	-	-
Failure to adequately document	No documentation of clinical improvement	3	3
	No documentation of clinical impression of pneumonia	1	
	No documentation of follow-up discharge	4	

Table XXI
Categories of Deficiencies Found in Ten MCE Studies on Appendectomy
Organized by Problem Area

PROGRAM AREA	EXAMPLE OF DEFICIENCIES WITHIN PROBLEM AREA	NUMBER OF STUDIES IN WHICH DEFICIENCY OCCURRED	NUMBER OF CATEGORIES OF DEFICIENCIES WITHIN PROBLEM AREA
Failure to complete routine hospital care	Routine chest x-ray not done	1	1
Failure to provide adequate disease specific care: diagnostic	Patient did not meet criteria for justified admission	1	1
Failure to provide adequate disease specific care: treatment	Patient not on regular diet with normal bowel function at discharge	1	2
	Patient did not receive home care orders	1	
Inappropriate utilization	Length of stay outside of norms	1	1
Unjustified outcomes	Surgery not justified by sufficient signs and symptoms	3	2
	Gangrenous or perforated appendix	1	
Failure to adequately document	Failure to document wound status at discharge	8	2
	Failure to document patient on full diet at discharge	1	

Table XX II
Categories of Deficiencies Found in Seven MCE Studies on Cholecystectomy
Organized by Problem Area

PROBLEM AREA	EXAMPLE OF DEFICIENCIES WITHIN PROBLEM AREAS	NUMBER OF STUDIES IN WHICH DEFFICIENCY OCCURRED	NUMBER OF CATEGORIES OF DEFICIENCIES WITHIN PROBLEM AREA
Failure to complete routine hospital care	—	—	—
Failure to provide adequate disease specific care: diagnostic	No record of pre-operative cholecystogram confirming diagnosis prior to operation	3	5
	EKGs indicated but not done	2	
	Electrolyte studies indicated but not done	1	
	Fasting blood sugar levels abnormal	1	
	Non-performance of operative cholongiography	1	
Failure to provide adequate disease specific care: treatment	-	-	-
Inappropriate utilization	-	-	-
Unjustified outcomes	No satisfactory wound healing	2	3
	Wound dehiscience	1	
	No positive pathology report	1	
Failure to adequately document	No documentation that patient was tolerating diet	1	2
	Progress notes inadequate to justify variations	1	

of blood pressure and weight on admission are examples of this type of deficiency. Likewise, only a few problems were highlighted in the area of utilization. Unjustified outcomes such as mortality, unnecessary surgery, and wound dehiscence, were problem areas occasionally identified. The main problem areas revealed by these studies, however, related to the failure to provide adequate disease specific care in terms of diagnosis, the failure to provide adequate disease specific treatment, and the failure to document adequately.

Table XXIII summarizes the MCEs (of the 37 evaluated) in which deficiencies were found and the number of categories of deficiencies (of the 46 categories found across all studies) for each problem area. The summarized data included in Table XXIII emphasize the fact that the sample of studies evaluated for this study did, in fact, disclose problems in medical care process and in patient outcomes.

The next point of interest is that these MCE studies were not only successful in highlighting problem areas. They were also successful 68% of the time in eliminating an adequate number of all identified deficiencies. Of the 37 studies evaluated, 25 received acceptable scores for eliminating deficiencies, that is, either 50% of unjustified variation was removed or no more than 10% of medical practice or outcomes remained out of compliance with a standard. The impact data is somewhat inconclusive in terms of what types of problem areas had the greatest number of deficiencies still remaining at the end of the reaudit. The deficiencies remaining seemed to fall primarily in the problem area of failure to

Table XXIII

Distribution of the Number of Studies in Which Deficiencies Occurred By Problem Area and the Number of Categories of Deficiencies within Each Problem Area For All MCE Studies Considered

PROBLEM AREA	NUMBER AND PERCENT OF 37 STUDIES IN WHICH DEFICIENCIES OCCURRED				NUMBER AND PERCENT OF 46 CATEGORIES OF DEFICIENCIES WITHIN PROBLEM AREA			
	Number		Percent of Total Number		Number		Percent of Total Number	
Failure to complete routine hospital care	MI-1 P-1 A-1 C-0	Total 3	MI-2.7 P-2.7 A-2.7 C-0	Total 8.1	MI-1 P-1 A-1 C-0	Total 3	MI-2.2 P-2.2 A-2.2 C-0	Total 6.6
Failure to provide adequate disease specific care: diagnostic	MI-4 P-13 A-1 C-8	26	MI-10.8 P-35.0 A- 2.7 C-21.6	70.1	MI-4 P-4 A-1 C-5	14	MI-8.7 P-8.7 A-2.2 C-11.0	30.4
Failure to provide adequate disease specific care: treatment	MI-19 P-6 A-2 C-0	27	MI-51.3 P-16.2 A- 5.4 C- 0	72.9	MI-4 P-3 A-2 C-0	9	MI-8.7 P-6.5 A-4.3 C-0	19.5
Inappropriate utilization	MI-0 P-1 A-1 C-0	2	MI-0 P-2.7 A-2.7 C-0	5.4	MI-0 P-1 A-1 C-0	2	MI-0 P-2.2 A-2.2 C-0	4.4
Unjustified outcomes	MI-6 P-0 A-4 C-4	14	MI-16.2 P- 0 A-10.8 C-10.8	37.8	MI-1 P-0 A-2 C-3	6	MI-2.2 P-0 A-4.3 C-6.5	13.0
Failure to adequately document	MI-11 P- 8 A- 9 C- 2	30	MI-29.7 P-21.6 A-24.3 C- 5.4	81.0	MI-5 P-3 A-2 C-2	12	MI-11.0 P- 6.5 A- 4.3 C- 4.3	26.1

*Reproduced from "Analysis of the Results (Process and Immediate Impact) of MCEs Done in Four Major Topic Areas," August 22, 1

adequately document, and the problem area of failure to provide adequate disease specific diagnoses. However, a point which may be particularly important and encouraging is that all outcome deficiencies were eliminated. For this sample of studies, despite their varying effectiveness in eliminating medical care process deficiencies, the MCEs examined succeeded in removing all deficiencies in the most critical category, patient care outcomes.

The results of the studies evaluated lead to the conclusion that when audits are reasonably well done, more than half of any deficiency identified can be eliminated or reduced to a point where variation is no more than 10%. If BQA can encourage a higher level of reaudit activity and more rigorous implementation of the entire MCE process, the potential of the MCE study for disclosing and eliminating problem areas can be further demonstrated. Also, with more MCEs to examine the actual impact of the types of results pointed out here can be measured with greater specificity and accuracy.

5.0 AN EVALUATION OF THE POTENTIAL IMPACT OF THE OVERALL MCE PROGRAM

> The concepts underlying the medical audit are in the finest tradition of medicine and go back to the very beginning of the profession. Medicine is a true, learned profession. The physician is unselfishly dedicated to the welfare of his fellow men. Now that the term "professional" is applied loosely to almost anyone who is paid for whatever he does, it is important that the attributes of a learned profession be clearly defined. High on the list is the willingness to engage in self-evaluation, self-criticism, and self-discipline.
>
> — C. W. Eisele, M.D.

5.1 Introduction

The Medical Care Evaluation Program as currently implemented is a means for physicians to review the technical quality of professional care provided by their peers and other providers of services in their hospitals. This is accomplished by comparing information from patient records with standards of care which physicians in individual hospitals have themselves established. It is the aim of the MCE process to detect and remove problem areas in the medical care process and to then confirm that improvement in the quality of care with a reaudit.

The purpose of this volume is to evaluate the MCE Program as it identifies and eliminates problem areas. There are several ways this can be done. First, one may attempt to measure the effect of MCEs on

the health status of a population. Given the difficulty, however, of measuring community health status with any specificity, the many non-medical factors which influence that status, and the early stage of the PSRO Program, this approach is not feasible.

Alternatively, one may look for improvement in the health status of those members of the community who have been treated in the hospital. Few studies thus far have examined the long-term outcomes of hospital treatment, and it is likely that once the patient leaves the hospital the difficulties of follow-up will prevent such measures from becoming a routine part of the medical audit for some time.[2]

A third approach to MCE assessment is to examine changes in health system performance which have come about as a result of medical audits. The anecdotes presented in Cahpter 4 demonstrate that individual MCEs can bring about dramatic improvements in the process of medical care and proximate patient outcomes on a case by case basis. However, we do not yet have sufficient data to evaluate the impact of the whole MCE Program. This Chapter estimates that overall impact by examining how well PSROs are selecting MCE topics and how thoroughly they are instituting MCE follow-up procedures.

The rationale of this chapter is as follows: The MCE Program can have impact on overall medical care or patient outcomes only if present MCE activity has potential to identify and remove important problem areas.

Without adequate topic selection, MCEs have little chance of finding problem areas; without adequate follow-up there is no assurance

that the problem areas found will be acted upon or that actions taken are appropriate. Thus, the MCE Program's likelihood of having impact at present is only as good as the methods used by PSROs to date in these two areas. Topic selection is the subject of the first part of this chapter; follow-up is discussed in the second part.

5.2 A Conceptual Framework for Evaluating PSRO Practices In MCE Topic Selection

Any attempt to assure the quality of American medical care, even if its purpose is limited to treatment provided in short-term acute-care hospitals, is necessarily a large and complex undertaking. In a recent year, for example, the National Center for Health Statistics estimates that 22 million Americans - over 10% of the population - were hospitalized in short-stay hospitals for a total of 235 million patient-days.[3] Care was provided to these patients through a complex technological and organizational structure with a highly sophisticated division of labor. While it is the goal of the PSRO Program as a whole to promote "the effective, efficient, and economical delivery of health care services of proper quality" for those patients whose care is federally funded, physicians carrying out MCE reviews must consider the quality of care provided to all patients, regardless of the source of payment.

The MCE Program can be conceived of as an organized means of monitoring the countless operations of a very large health care system, comparing performance with accepted standards, feeding back to the system recommendations for improvement of quality of care, and assuring

that these recommendations are acted upon. There is no doubt that the vast majority of the elements of care are being carried out effectively: the premise of the MCE Program is that unknown - perhaps randomly distributed - problem areas remain and that systematic comparison of the elements of care in selected topic areas with explicit standards can detect them and lead to their elimination. It is the purpose of this chapter to develop a methodolgy for rating MCE topics according to the probability that they will reveal problems in the medical care delivery system under review. The methodology will then be used to evaluate the adequacy of topic selection among the studies in the sample under consideration which consists of all MCEs in the twenty most frequent topic categories. In the discucssion which follows, all clinical judgments, particularly factor weights, have been made by a panel of three physicians: the Project Officer, the Project Monitor, and the MCE Project Consultant.

An indicator of the probable impact of an MCE done in a particular topic category has been developed. The indicator is "computed" for each topic category by ranking it according to three criteria:

1. Chance of Finding and Removing Randomly or Systematically Distributed Problem Areas

   The topic category whose scope includes the most patients, physicians, and costly services will most likely contain MCEs that elucidate important problem areas. A further constraint is the MCEs in these categories will have impact only if the problem areas can be realistically removed.

2. Situation Specific Rationale

   The topic most commonly selected in response to local needs (based on known hospital difficulties) will most likely target the audit to existing problem areas.

3. Individual MCE Topic Specificity

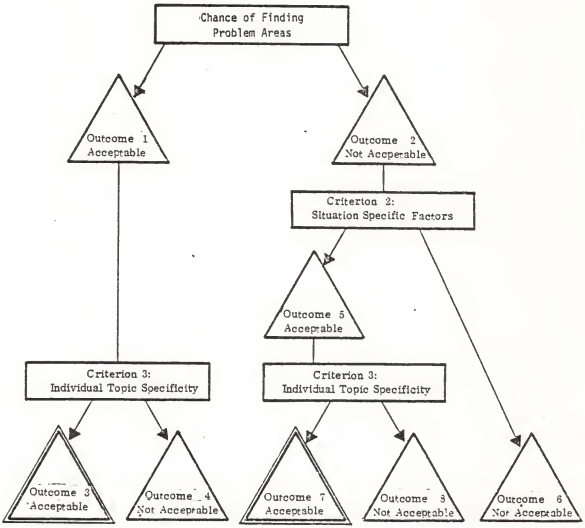
   The MCE topics which are selected with objectives that focus the scope of the topic will be most likely to be successful in sorting out deficiencies into discrete problem areas.

An individual MCE Topic may be judged valid (and be expected to point out problem areas) if the scope of the Topic Category is large enough to ensure the discovery of random or systematically distributed remediable problem areas. The value of the indicator increases and the individual topic is more validly chosen if the topic is specifically focused, further permitting the disclosure of problem areas. Lastly, the topic may be validly chosen if the situation specific factors warrant an MCE, even if the scope of the topic category is small.

The meaning of these criteria, their operational definition, and their application will be presented in the next three sections. The manner in which they are combined into an overall topic/category rating system will be discussed. The 20 most frequent topic categories will be ranked according to their likelihood of containing potentially high impact MCE (MCEs which identify important problem areas). The pattern of overall PSRO topic selection process will then be assessed by use of the topic category rating system.

In terms of the conceptual system to be described, an individual MCE study topic is determined to be valid if it falls into either outcome three or seven on the following algorithm or decision tree chart.

Chart IV


Chance of Finding Problem Areas
Outcome 1 Acceptable
Outcome 2 Not Acceptable
Criterion 2: Situation Specific Factors
Outcome 5 Acceptable
Criterion 3: Individual Topic Specificity
Criterion 3: Individual Topic Specificity
Outcome 3 Acceptable
Outcome 4 Not Acceptable
Outcome 7 Acceptable
Outcome 8 Not Acceptable
Outcome 6 Not Acceptable

5.3 Criterion 1: Chance of Finding and Removing Randomly or Systematically Distributed Problem Areas

A well-chosen MCE topic category* should have a high probability of finding existing problems in medical care process or patient outcomes. The topic category is most likely to facilitate problem identification if it maximizes two attributes: a) if the category is of sufficient scope that it involves a large proportion of the health delivery system, as measured by the numbers of patients, physicians, and dollars involved annually; and b) if there is agreement on indications for treatment and modes of treatment, and treatment is likely to lead to improvement in problem areas such as the patient's health status. MCEs in topic categories with great importance and magnitude can be expected to reveal problem areas, if they exist, which are of proportionate importance. However, MCEs even in topic categories of large scope can have little impact if there is not general consensus concerning application of procedures for diagnosis and treatment or if treatment is ineffective in removing health problems of the patient.

The chance of a topic category to contain MCEs that find randomly or systematically distributed problems, then, can be rated by measuring and combining four factors:

Factor I: Size of the patient population directly and potentially affected by the topic category.

* As explained in Chapter III, a topic category is an aggregation of individual MCE topics, generally by diagnostic or procedural category.

Factor II: Size of the provider population directly and potentially affected by the topic category.

Factor III: The direct economic cost of the disease entity or hospital procedures audited within the topic category.

Factor IV: Efficacy as reflected by degree of agreement on indications for treatment and modes of treatment, and the likelihood that treatment will lead to health benefit.

Factor I - Size of Patient Population

Factor I, the size of the patient population directly or indirectly affected by a topic related category consists of two components. Each component is assigned a weighted component value reflecting its relative importance, and component values are combined to yield a factor value.

Components

The factor value of Factor I, size of the patient population, is computed on the basis of two components. These are:

a) Annual hospital care episodes, as indicated by the total number of discharges from short stay hospitals, in 1975, by primary diagnosis. Data used here were compiled by the Hospital Statistics Branch of the National Center for Health Statistics, and have not yet been published. Data on the frequency of emergency room discharges were obtained from 1975 hosptial statistics reported by the American Hospital Association.

b) Prevalence of the medical condition. Prevalenece data were compiled by the Health Interview Survey of the National Center for Health Statistics, by the Biometry Branch of the National Heart and Lung Institute and

and by the Arthritis and Digestive Diseases Branches of the National Institute on Arthritis, Metabolism, and Digestive Diseases.

Factor Value Computation

The total number of hospital dischrages in each topic category indicates the annual number of hospital care episodes related to the disease entity or medical procedure being considered. The size of the patient population potentially affected is indicated by the prevalence of the medical condition. Where both prevalence and hospital care episode data provide relevant information, these components are assigned component values which are combined to arrive at the factor value for each topic category.

For certain topic categories, such as hysterectomy and delivery, prevalence data do not provide meaningful information. In these instances the component value for hospital discharge rate is given additional weight to equal the potential combined weight allowed for both components, and provides the factor value.

To provide a basic rank value, topic categories are arranged in inverse rank order within each component rating. Thus the topic category of greatest magnitude receives the highest rank value. In the case of the sample considered by this report, the highest rank value is 20 since there are 20 topic categories.

Component values are computed by multiplying a weight of .4 by the topic category's rank for the hospital care episode component, and a weight of .3 times the rank for the prevalence component. This

yields a combined weight of .7 for the two components of this factor. The two component values are then added to yield a score on Factor I for each topic category under consideration. The weighting assigned to the hospital care episodes component is somewhat higher than that assigned to the prevalence component, as the annual number of hospital care episodes was judged by the physician panel to be the more important indicator of the magnitude of the patient population affected. When there are no prevalence rankings, hospital care episodes rankings are multiplied by the weights of .7. Since there are only seven prevalence indicators, their rank values were computed on as basis of 1 to 7 and these 7 values were evenly distributed over the range of 20 rankings with an interval of 2.9 between each.

As displayed on Table XXIV when factor values were computed for the 20 most frequently audited topic categories, emergency room was found to affect the largest patient population. Delivery, tonsillectomy and adenoidectomy, hysterectomy, pneumonia, breast lesions, appendectomy, cholecystectomy, ulcer and inguinal hernia were also found to affect large patient populations.

Factor II: Size of Provider Population Directly and Indirectly Affected by A Topic Category

Factor II, the size of the provider population directly and indirectly affected by the topic categories under consideration, is judged equal in importance to Factor I in determining the relative

Table XXIV

FACTOR I: Size of Patient Population

TOPIC RELATED CATEGORY	Rate of Hospital Discharge (thousands)	Inverse Rank Order	Component Value	Prevalence (thousands)	Inverse Rank Order	Component Value	Factor Value
Myocardial Infarction	390	6	2.4	20,000	11.3	3.4	5.8
Pneumonia	715	16	11.2				11.2
Cholecystectomy	605	12	4.8	22,000	14.2	4.3	9.1
Appendectomy	617	14	9.8				9.8
Hysterectomy	725	17	11.9				11.9
C-Section	328	4	2.8				2.8
Tonsillectomy & Adenoidectomy	758	18	12.6				12.6
Hip Fracture	287	3	2.1				2.1
Diabetes	533	11	4.4	4,191	8.4	2.5	6.9
Prostatectomy	505	9	6.3				6.3
Breast Lesions	620	15	10.5				10.5
Emergency Room	73,000	20	14				14
Inguinal Hernia	514	10	7				7
Gastroenteritis	225	1	.7				.7
Ulcer	411	7	2.8	22,684	17.1	5.1	7.9
Cataract	333	5	3.5				3.5
Hypertension	232	2	.8	30,000	20	6.0	6.8
Delivery	3255	19	13.3				13.3
Cerebrovascular Accident	607	13	5.2	1,800	2.6	0.8	6
Congestive Heart Failure	500	8	3.2	2,000	5.5	1.7	4.9

potential impact of topic categories and has been given equal weight.

Components

Factor II is comprised of two components. These are:

a) The overall number of physicians who are potentially involved in health care delivery for the indicated disease entity or medical procedure.

b) The number of physicians and special facilities or services personnel, such as coronary care unit, operating room or other ancillary personnel involved in each episode of care for the topic category.

The first component, the number of physicians potentially involved in delivering care, indicates the total number of physician providers in the nation who logically might be expected to be involved in the delivery of care for this topic category.

The second component, the number of physicians and special facilities or services personnel involved in each episode of care, indicates the size of the provider team potentially required for delivery of care for each health care episode within a topic category. Provider team here refers to physicians and special facilities and services personnel. It does not include nurses who do not work in special facilities or services.

Factor Value Computation

Factor II is considered to be of equal importance with Factor I. To assure this the same factor weight of 0.7 was assigned. This resulted in a maximum factor value range for provider population equal to one third of the magnitude of problem rating. This was achieved by allowing factor of 0.7 to 14.

Of the two components of Factor II, the first component, total potential physician involvement per topic category, was considered to be more important and is weighted more heavily than the second. Component 1 was assigned a weight of 0.4; component 2 was assigned a weight of 0.3.

No reliable data are available for either total numbers of providers involved or the providers per episode for each of the topic categories. Therefore, a matrix was constructed of physician providers by specialty who would normally be expected to be involved in some aspect of delivery of care for each of the topic categories. This matrix is shown in Table II. Provider specialty or service areas affected by each of the topic categories were determined by the Project Office in collaboration with the Project Monitor, both of whom are physicians. Figures for the number of physicians in each of the specialty categories were obtained from the AMA's "Physician Distribution and Medical Licensure, 1975."

Rank assignments for component 1 are determined by summing the total number of providers in each specialty or service area potentially affected by the topic category under consideration. For the twenty most frequently audited topic categories, these determinations were made on the basis of the information presented in Table XXV.

To obtain a comparative index of provider involvement per episode of care for each of the topic categories, some adjustment was required beyond merely totalling the affected specialties and service areas shown on Table XXV. For each topic category a primary care physician

Table XXV

Probable Provider Involvement in MCE Study Topic Areas

TOPIC RELATED CATEGORY	GP (51270)	Immun. (1517)	CV (5584)	Gastro (1814)	Int. Med. (43936)	Ped (18546)	PUL (1566)	Surg (28460)	OB/GYN (19742)	Opth (10320)	Orth (10207)	OTO (5132)	Plast (2078)	Th.S. (1729)	Anes (11491)	Uro (6048)	Neurol (2991)	Psych (18963)	PMR/OM (2324)	Rad (12828)	Emer. Rm. (15000)	Other Spec. (15791)	OR	Ancillary Services	Producer Participation Per Episode
Myocardial Infarction	●	0	x	0	●	0	x	0	0	0	0	0	0	x	0	0	0	0	0	x	x	0	0	●	5.5
Pneumonia	●	x	0	0	●	x	x	0	0	0	0	0	0	0	0	0	0	0	0	x	x	0	0	0	4.5
Cholecystectomy	x	0	0	x	0	0	0	●	0	0	0	0	0	0	x	0	0	0	0	x	x	0	●	0	4.5
Appendectomy	x	0	0	x	0	0	0	●	x	0	0	0	0	0	x	0	0	0	0	0	x	0	●	0	4.5
Hysterectomy	x	0	0	0	0	0	0	x	●	0	0	0	0	0	x	0	0	0	0	0	0	0	●	0	3.5
C-Section	x	0	0	0	0	0	0	x	●	0	0	0	0	0	x	0	0	0	0	0	0	0	●	0	3.5
Tonsillectomy & Adenoidectomy	x	0	0	0	0	●	0	x	0	0	0	●	0	0	x	0	0	0	0	0	0	0	●	0	4.5
Hip Fracture	0	0	0	0	0	0	0	x	0	0	●	0	0	0	x	0	0	0	x	x	x	0	●	●	5.5
Diabetes	x	0	x	0	●	x	0	x	x	x	0	0	0	0	0	0	x	0	0	0	x	0	0	●	6
Prostatectomy	0	0	0	0	0	0	0	x	0	0	0	0	0	0	x	●	0	0	0	0	x	0	●	●	4.5
Breast Lesions	x	0	0	0	0	0	0	●	x	0	0	0	x	0	x	0	0	0	x	x	0	0	●	0	5
Emergency Room	0	0	0	0	x	x	0	x	0	0	x	0	x	x	0	0	0	0	0	0	●	0	-	0	4
Inguinal Hernia	x	0	0	0	x	x	0	●	0	0	0	0	0	x	x	0	0	0	0	0	0	0	●	0	4
Gastroenteritis	●	x	x	0	x	x	0	0	0	0	0	0	0	0	0	0	0	0	0	x	x	0	0	0	4
Ulcer	x	0	0	x	●	x	0	x	0	0	0	0	0	0	0	0	0	x	0	x	x	0	0	0	4.5
Cataract	x	0	0	0	0	0	0	0	●	0	0	0	0	x	0	0	0	0	0	0	0	0	●	0	3
Hypertension	●	0	x	0	●	x	x	0	x	x	0	0	0	0	0	0	x	0	0	x	x	0	0	●	7
Delivery	x	0	0	0	0	0	0	0	●	0	0	0	0	0	x	0	0	0	0	0	x	0	●	0	3.5
Cerebrovascular Accident	x	0	x	0	●	0	0	0	0	0	0	0	0	x	0	0	x	x	x	x	x	0	0	●	5.5
Congestive Heart Failure	x	0	x	0	●	x	x	0	0	0	0	0	0	x	0	0	0	0	0	x	x	0	0	●	5.5

was designated as indicated by the darkened circle on the matrix. This was given a value of one. For certain topic categories primary care might be referred or shared by different types of physicians. Since other physician categories, designated as potentially involved, represent alternative providers in many cases, they are accorded a value of 1/2. Additional recognition is given to those procedures which require more than normal non-physician provider input, such as operating room personnel, coronary care unit personnel, and providers of extensive follow-up services (therapists, dieticians, etc.). Two additional categories of personnel are added for these provider groups (special facilities and ancillary services). Each was counted as a value of one where this addition is appropriate.

As Table XXVI indicates, of the 20 most frequently audited topic related categories, diabetes was determined to affect the greatest number of providers. Hypertension, cerebrovascular accident, congestive heart failure and ulcer also affect large numbers of providers.

Factor III: Direct Economic Cost

The third factor considered in assessing the validity of topic categories is economic cost. Evaluating this factor contributes to understanding the relative cost benefit of assuring the quality of medical care for various procedures and conditions. Because Factor III is considered to be as important as Factors I and II in assessing a topic category's potential impact on the health status of the population, it is

Table XXVI

Weighted Comparative Value for Provider Population (Factor II)

TOPIC RELATED CATEGORY	Number of Physicians Affected (in thousands)	Inverse Rank Order	Component Value	Providers per Episode	Inverse Rank Order	Component Value	Factor Value
Myocardial Infarction	132	13	5.2	5.5	16.5	5	10.2
Pneumonia	145	14.5	5.8	4.5	10.5	3.2	9.0
Cholecystectomy	121	10	4	4.5	10.5	3.2	7.2
Appendectomy	128	11.5	4.6	4.5	10.5	3.2	7.8
Hysterectomy	111	6.5	2.6	3.5	3	0.9	3.5
C-Section	111	6.5	2.6	3.5	3	0.9	3.5
Tonsillectomy & Adenoidectomy	115	8	3.2	4.5	10.5	3.2	6.4
Hip Fracture	81	4	1.6	5.5	16.5	5	6.6
Diabetes	196	20	8	6	19	5.7	13.7
Prostatectomy	61	2	.8	4.5	10.5	3.2	4.0
Breast Lesions	128	11.5	4.6	5	14	4.2	8.8
Emergency Room	15	1	.4	4	6	1.8	2.2
Inguinal Hernia	116	9	3.6	4	6	1.8	5.4
Gastroenteritis	145	14.5	5.8	4	6	1.8	7.6
Ulcer	191	19	7.6	4.5	10.5	3.2	10.8
Cataract	73	3	1.2	3	1.0	0.3	1.5
Hypertension	182	18	7.2	7	20	6	13.2
Delivery	98	5	2	3.5	3	0.9	2.9
Cerebrovascular Accident	163	17	6.8	5.5	16.5	5	11.8
Congestive Heart Failure	150	16	6.4	5.5	16.5	5	11.4

weighted equally with them and contributes up to one third of the magnitude of the problem rating.

Components

The economic cost factor value is of a composite of four cost related components. These are:

a. Average total charge per discharge by primary diagnosis of Medicare beneficiaries in short stay hospitals, exclusive of physicians' fees, in 1973. Though these costs represent charges made to Medicare beneficiaries, the relative magnitudes of hospital charges by topic categories are assumed to reflect relative magnitudes of charges made to other types of hospital patients.

Average charge per discharge data were generated from the Social Security Administration's "Med Par" analysis of a 20% random sample of billing forms for Medicare beneficiaries in short stay hospitals in 1973.[4] Costs displayed include all hospital service charges including length of stay and ancillary services charges. Physicians' charges are not included. Costs cited for topic categories in Classification A, Medical, reflect mean charges per discharge of non-operated patients. Costs cited for topic categories in Classification B, Surgical, reflect mean charges per discharge of patients who underwent surgery.

Data were not available from this source for hospital costs of cesarean section, tonsillectomy and adenoidectomy, delivery, and emergency room. Costs for the first three of these procedures are not

reimbursed by Medicare. The cost estimates cited for delivery and tonsillectomy and adenoidectomy were interpolated from average hospital charges per day of care for surgical procedures, as reported by the Social Security Administration, and average length of hospital stay, as reported by the Commission on Professional Hospital Activities. Interpolations from this formula have a standard error of 78% of one standard deviation. These two estimates may therefore be in error by $231 and $113 respectively. The cost estimate provided for cesarean section was interpolated from hospital charges and physicians charges, as length of stay data are not available. This estimate may be in error by $549. Emergency room charges, which are not available through the Social Security Administration or the Insurance Commission of the State of Maryland, were taken from a previous study on the cost of emergency room procedures in Cleveland.

b. The 50th percentile cost of physicians' services for hospitalized patients in the State of Maryland by primary diagnosis or procedure, in 1973. Median physicians' charges in the State of Maryland were taken as representative of the relative magnitude of physicians' charges per topic category. Though physicians' charges may vary in different areas of the country, it is assumed that their relative magnitude will not, nor will their rank order. In other words, it is assumed that in general the most expensive procedures in a given area will also be the most expensive procedures in any other area. The Insurance Commission of the State of Maryland maintains comprehensive data on these costs within that

state; these data are not available on a national basis.

c. A none/some ranking of the chronicity, or likelihood of of repeated episodes of hospital care, for patients with conditions under consideration. The long-term direct economic cost of a topic category is influenced by that topic's chronicity. To assure appropriateness and reliability, ranking determinations were made by the Project Officer in collaboration with the Project Monitor, both of whom are physicians.

d. The final component considered in the economic cost factor is the likelihood that substantial follow-up treatment and services can be expected to be associated with specified conditions. Magnitude of follow-up costs are indicated by a none/some ranking which was again made by the Project Officer in collaboration with the Project Monitor, both of whom are physicians.

Factor Value Computation

Factor III is considered to be as important as Factor I and II from the perspective of quality assurance and is given the same weight.

A basic rank ordering of topic categories is determined by an adding of components a and b which indicates the total dollar costs per episode of care within each topic category. Inverse rank order values are then multiplied by .55, a weighting coefficient which is employed to maintain the equality in magnitude between Factor III and

the other two factors. The resulting component value for total dollar cost is then modified by the addition of the modifier value (2) for chronicity and the value (1) for follow-up. The combined component values of component c and d may represent up to 21.4% of the factor value for the most expensive topic related category, and up to 84.5% of the factor value of the least expensive topic related category. This is felt to reflect the relative importance of chronicity and follow-up to the direct economic cost of an illness. They increase in direct proportion to the size of the sample being considered. Combining total dollar cost component values with chronicity and follow-up values yields the factor value for Factor III.

Table XXVII demonstrates that of the 20 most frequently audited topic categories, cesarean section was found to incur the highest direct economic cost. Myocardial infarction, cholecystectomy, breast lesions, prostatectomy, appendectomy, cerebrovascular accident, congestive heart failure, hysterectomy, and cataract were also found to incur high direct economic costs.

Factor IV: Efficacy

Efficacy refers to the potential for achieving positive or acceptable health care outcomes, for avoiding or delaying negative outcomes, and the extent to which diagnosis and treatment are based upon clear and widely accepted standards and criteria.

Efficacy of diagnosis and treatment procedures is a prerequisite for assuring the quality of care in any topic related category.

Table XXVII

Factor III: Economic Cost

TOPIC RELATED CATEGORY	Average Toal Charge Per Discharge Exclusive of Physicians' Charges,for Medicare, 1973	Median Physicians' Services Charges, Maryland 1973	Total Dollar Cost	Inverse Rank Order	Component Value	Chronicity	Modifier	Follow-Up	Modifier	Factor Value
Myocardial Infarction	1649	181	1830	14	7.7	x	2	x	1	10.7
Pneumonia	1126	88	1214	9	5	0		0		5
Cholecystectomy	1824	415	2239	19	10.5	0		0		10.5
Appendectomy	1882	230	2112	17.5	9.6	0		0		9.6
Hysterectomy	1386	475	1861	15	8.3	0		0		8.3
C-Section	1662*	450	2112	17.5	9.6	x	2	0		11.6
Tonsillectomy & Adenoidectomy	399*	118	517	2	1.1	0		0		1.1
Hip Fracture	2401	450	2851	20	11	0		x	1	12
Diabetes	971	97	1060	6	3.3	x	2	x	1	6.3
Prostatectomy	1410	488	1898	16	8.8	0		x	1	9.8
Breast Lesions	1428	208	1636	13	7.2	x	2	x	1	10.2
Emergency Room	40*	25*	65*	1	6	0				6
Inguinal Hernia	980	225	1205	8	4.4	0		0		4.4
Gastroenteritis	567	61	628	3	1.7	0		0		1.7
Ulcer	919	84	1003	5	2.8	x	2	x	1	5.8
Cataract	697	675	1372	11	6	0		x	1	7
Hypertension	675	78	753	4	2.2	x	2	x	1	5.2
Delivery	819*	325	1144	7	3.9	x	2	0		5.9
Cerebrovascular Accident	1311	148	1459	12	6.6	x	2	x	1	9.6
Congestive Heart Failure	1155	113	1268	10	5.5	x	2	x	1	8.5

Thus, to the extent that efficacy is found to exist for outcomes and diagnostic and treatment procedures for a topic related category the magnitude of problem rating assigned to that topic related category is increased. This provides an index of the potential for MCE studies within the topic category to contribute to improving the health status of the population.

Components

Efficacy refers to the potential for achieving positive or acceptable health care outcomes or for maintaining and assuring the quality of care, within a topic related category. The efficacy factor addresses the likelihood that treatment will be appropriate and beneficial; that it will reduce or postpone morbidity, complications, or mortality; and conversely that poor treatment or no treatment will have an adverse effect.

Efficacy is measured by assigning a none/some rating to topic categories for each of the three components.

For the 20 most frequently audited topic related categories, these none/some ratings were made by the Project Office in collaboration with the Project Monitor.

The three components of the efficacy factor address diagnosis, treatment, and outcomes. These components are:

a. Clear and accepted indications for treatment are said to exist when there is fundamental agreement among members of the medical community about the reliability of specific diagnostic and therapeutic indicators, and when these judgments are based upon established well defined, operational criteria. The first component of the efficacy factor is thus related to diagnosis.

b. Clear and accepted modes of treatment are said to exist when there is consensus within the medical community about the appropriateness of proposed interventions.

c. Likelihood of health benefit from treatment. This component addresses the likelihood that therapeutic intervention will produce a more favorable outcome than would be obtained without such intervention.

Factor Value Computation

Factor values are derived by combining component values and adding 1. A positive component rating is assigned the value of 0.1. Thus, factor values for the efficacy factor may range from 1, expressing identity, no increase, or lack of efficacy, to 1.3, expressing a 30% increase or a high degree of efficacy. These weights were determined by the Project Officer, and the MCE Project Research Consultant in collaboration with the Project Monitor, all of whom are physicians.

As Table XXVIII demonstratess, when efficacy is measured for the twenty most frequently audited topic related categories, one topic related category receives a low efficacy value. That is, efficacy is found

Table XXVIII

Factor IV: Efficacy

TOPIC RELATED CATEGORY	Clear and Accepted Indications for Treatment	Component Value	Clear and Accepted Modes of Treatment	Component Value	Likelihood of Health Benefits	Component Value	Effectiveness Modifier
Myocardial Infarction	x	.1	0	0	0	.0	1.1
Pneumonia	x	.1	x	.1	x	.1	1.3
Cholecystectomy	x	.1	x	.1	x	.1	1.3
Appendectomy	x	.1	x	.1	x	.1	1.3
Hysterectomy	0	0	x	.1	x	.1	1.2
C-Section	0	0	x	.1	x	.1	1.2
Tonsillectomy & Adenoidectomy	0	0	x	.1	0	0	1.1
Hip Fracture	x	.1	x	.1	x	.1	1.3
Diabetes	0	0	0	0	0	0	1.0
Prostatectomy	x	.1	x	.1	x	.1	1.3
Breast Lesions	x	.1	0	0	x	.1	1.2
Emergency Room	0	.1	x	.1	-	-	1.2
Inguinal Hernia	x	.1	x	.1	x	.1	1.3
Gastroenteritis	x	.1	0	0	0	0	1.1
Ulcer	x	.1	0	0	0	0	1.1
Cataract	x	.1	x	.1	x	.1	1.3
Hypertension	x	.1	x	.1	x	.1	1.3
Delivery	x	.1	x	.1	x	.1	1.3
Cerebrovascular Accident	x	.1	0	0	0	0	1.1
Congestive Heart Failure	x	.1	x	.1	x	.1	1.3

to be lacking for diabetes.

Computing the Relative Chance of Finding and Removing Randomly or Systematically Distributed Problem Areas

When factor values are computed for all four factors, a relative potential impact ranking may be derived for the topic related categories under consideration.

This procedure involves two steps:

1) Multiply the sum of Factors I, I, and II by the efficacy factor value (Factor IV) for each topic category. This will yield a potential impact rating.

2) Arrange the potential impact ratings in rank order. This will yield a relative potential impact ranking.

This procedured was applied to the 20 most frequently audited topic related categories and the results are presented in columns six and seven of Table XXIX. Of these topic related categories, breast lesions and appendectomy were found to have the greatest potential for contributing to the health status of the population. Cholecystectomy, hypertension, pneumonia, congestive heart failure, cerebrovascular accident, myocardial infarction, delivery and hysterectomy were also highly ranked.

The first three factors were added in the probability sense that either I, II, or III may be large enough to ensure the discovery of a randomly or systematically distributed problem area. However, the Factor IV is multiplied in the probability sense that a category

Table XXIX

Chance of Finding Problem Areas in the Twenty Most Frequently Audited Topic Categories (Criterion 1)

TOPIC RELATED CATEGORY	Patient Value	Provider Value	Economic Value	Magnitude of Problem Rating	Efficacy Modifier	Potential Impact Rating	Relative Potential Impact Ranking
Myocardial Infarction	5.8	10.2	10.7	26.7	1.1	29.4	8
Pnuemonia	11.2	9.0	5	25.2	1.3	32.8	4.5
Cholecystectomy	9.1	7.2	10.5	26.8	1.3	34.8	3
Appendectomy	9.8	7.8	9.6	27.2	1.3	35.4	1.5
Hysterectomy	11.9	3.5	8.3	23.7	1.2	28.4	10
C-Section	2.8	3.5	11.6	17.9	1.2	21.5	17
Tonsillectomy & Adenoidectomy	12.6	6.4	1.1	20.1	1.1	22.1	15
Hip Fracture	2.1	6.6	12	20.7	1.3	26.9	12.5
Diabetes	6.9	13.7	6.3	26.9	1.0	26.9	12.5
Prostatectomy	6.3	4.0	9.8	20.1	1.3	26.1	14
Breast Lesions	10.5	8.8	10.2	29.5	1.2	35.4	1.5
Emergency Room	14	2.2	.6	16.8	1.2	20.2	18
Inguinal Hernia	7	5.4	4.4	16.8	1.3	21.8	16
Gastroenteritis	.7	7.6	1.7	10	1.1	11.7	20
Ulcer	7.9	10.8	5.8	24.5	1.1	27	11
Cataract	3.5	1.5	7	12	1.3	15.6	19
Hypertension	6.8	13.2	5.2	25.2	1.3	32.8	4.5
Delivery	13.3	2.9	5.9	22.1	1.3	28.7	9
Cerebrovascular Accident	6	11.8	9.6	27.4	1.1	30.1	7
Congestive Heart Failure	4.9	11.4	8.5	24.8	1.3	32.2	6

must be related to known benefits which can be realized by intervention (MCE and otherwise).

5.4 Criterion 2: Situation Specific Factor: Empiric Rating of PSRO Methods Used in Selecting Topics

An MCE topic which belongs to a category with low rated impact potential according to Factors I-IV need not have a low overall rating if it is selected because an audit committee wishes to examine an area it feels is problematic. As the Institute of Medicine points out: "A targeted review should enable more frequent identification of truly inappropriate care and less frequent review of appropriate care, which should increase the efficiency of review."[5] Thus, even if the random chance of finding problem areas is low due to a small scope of the topic category, the overall chance of finding problems may be high when the review is appropriately targeted.

Procedure

A 10% random sample of BQA 131 reporting forms was drawn from all studies in the twenty most frequently audited topic related categories in the sample data base. This sample consisted of 158 studies. The PSRO reporting each study was telephoned to request additional documentation from the originating hospital concerning the reasons for individual study topic selection. The PSROs indicated that they encountered some difficulty in obtaining this data because of the short turn around time involved. Nevertheless, additional information was obtained for 108 of the 158 studies or 68%. These 108 studies were

then rated acceptable or unacceptable in terms of topic selection by two independent raters, a physician and a public health specialist. Agreement was obtained in each.

Rating Criteria

The individual topics were rated as acceptable from the situation specific standpoint if reasons were cited as to a local situation in the hosptial which gave particular importance to such a study topic at that time. Among the reasons cited were:

- Unusually high frequency for a given disease or treatment procedure.
- Hospital concern about a particular problem which was suspected to be present or had been revealed by concurrent review, profile studies or death conferences.
- A desire to study a topic which was the subject of current research at the hospital.
- Physician concern that criteria for a particular topic area were inadequate and needed clarification.

A none/some determination was used and a liberal rating standard was applied in order to come up with a reasonable spread between the two categories.

Frequency was by far the most often cited reason for topic selection. Audit notes rarely reflected the level of investigation or thought on the part of the audit committee concerning other reasons for selecting the topic, such as its particular relevance to the health status of the population being served by the hospital or

concern about appropriateness of diagnosis, treatment conditions or administrative issues.

For judging individual topic selection in the future, criteria should be applied more rigorously. This survey indicates that further guidance from BQA or technical assistance may be indicated regarding methods for selecting health care priority topics within an institution.

Factor Value Computation

In view of the paucity of data available, no attempt was made to divide this factor into components with individual value ratings and a minimal score for acceptability. Any reasonable local cause for selection was deemed sufficient to classify the topic as accpetable for situation specific reasons.

For the purpose of arriving at a modifier to be applied to the potential impact ranking of the topic categories being assessed, the percentage of studies in each category found acceptable was used as the weighted value. The computation is shown in Table XXX. The total number of audits reviewed for each category is shown in column one. Those for which no additional data was obtained are shown in column two.

Those for which the additional data still did not permit an acceptable rating for situation specific reasons are shown in column three. Additional data which did permit an acceptable rating for the individual topic is shown in column four. Column five presents

Tabe XXX

Factor V: Situation Specific Rankings

TOPIC CATEGORY	Total Studies Reviewed	No Data Obtained	Number Considered Not Acceptable	Number Considered Acceptable	% of Sample	Rank Order	Factor Value
Myocardial Infarction	16	6	5	5	31	16	0.6
Pneumonia	14	4	5	5	36	14	0.7
Cholecystectomy	12	6	1	5	42	9	0.8
Appendectomy	11	7	1	3	27	19	0.5
Hysterectomy	9	1	2	6	67	5	1.3
C-Section	8	2	0	6	75	3	1.5
Tonsillectomy & Adenoidectomy	8	2	3	3	38	12.5	0.8
Hip Fracture	8	1	4	3	38	12.5	0.8
Diabetes	8	3	1	4	50	8	1.0
Prostatectomy	7	4	1	2	29	17.5	0.6
Breast Lesions	7	3	2	2	29	17.5	0.6
Emergency Room	6	2	0	4	67	5	1.3
Inguinal Hernia	6	1	1	4	67	5	1.3
Gastroenteritis	6	0	1	5	83	1	1.7
Ulcer	6	2	3	1	17	20	0.3
Cataract	6	2	2	2	33	15	0.7
Hypertension	5	1	1	3	60	7	1.2
Delivery	5	0	1	4	80	2	1.6
Cerebrovascular Accident	5	1	2	2	40	10.5	0.8
Congestive Heart Failure	5	3	0	2	40	10.5	0.8
Total	158	50	37	71			

the number rated acceptable as a percentage of the total data base for each category. Column six presents the ranking of each category based upon this percentage of studies within the category which were found to have acceptable situation specific considerations.

Situation specific factors can have a major impact on an individual study's entrance into the decision tree concerning acceptability as explained in Section 5.2 (p. 120) and are therefore a major consideration in rating individual studies. However, for the purpose of the current study in arriving at a selection of topic categories with a high concentration of valid topics, it was decided that specificicty charcteristics of the sample studied should not be given major weight in modifying the potential impact ranking previously determined by the process described in Section 5.3. This was particularly true in view of the liberal criteria used for judging situation specificity for this sample. A total weight of 0.02 was therefore assigned to the situation specificity factor. This was multiplied by the percentage of studies found acceptable in each category to determine the factor value as shown in column 7.

5.5 Criterion:3 Topic Specificity Factor: Empiric Rating of Methods in Specifying Specific Topics

For an individual MCE study to be considered valid, the topic it addresses usually should be sufficiently specific and focused to permit problem areas in medical care within that topic to be highlighted. The

rating of an individual study topic can only be made by examining its title as reported on PMIS form BQA 131 agianst criteria establishing limits to the size of patient and provider population and the scope of the medical condition or hospital procedure which can reasonably be investigated in one study. Although strict evaluation of the specificity of individual MCE study topics is considered desirable, until there is general consensus and acceptance by participating hospitals of the importance of selecting a sufficiently focused and manageable study topic and criteria to be used in doing so, it would be unrealistic to attempt to develop a more detailed rating system for topic specificity.

This section, therefore, presents a method for assessing specificity of individual MCE topics according to a liberal, rudimentary procedure and for deriving a factor value for the proportion of such studies in a topic category which are found acceptable. This may be used to modify category rankings determined previously. One should note that such a modifier applies only to the sample being analyzed and is only significant for the purpose of selection of studies for further in-depth analys.

Procedure

A 25% random sample of BQA 131 reporting forms was drawn from the total universe of MCE audits for each of the twenty most frequently audited topic categories. An acceptable/unacceptable (none/some) judgment was made by the Project Manager, an experienced health services

evaluator, concerning each of these 395 individual study topics as to whether that topic had been described in sufficiently specific terms to be useful for defining the study objectives and parameters. These judgments were reviewed and comfirmed by the MCE Project Consultant, a physician. The percentage of studies in each topic related category judged to have acceptable specificity was then used to establish a specificity ranking among the categories. This percentage figure for positive specificity for each topic related category was used to determine a ranking modifier for use in combining the results of the topic specificity analysis with those made for the potential impact and situation specific analyses.

The result of this procedure is presented in Table XXXI. The total number of audits reviewed for each topic category is shown in column one. The number unacceptable are listed in column two; this is shown as a percentage of the studies in the category in column three. The number found acceptable is listed in column four; the percentage acceptable in column five. The rank order of the topic related categories based upon this percentage of acceptable studies is shown in column six. The factor value is listed in column seven.

Ranking Criteria

The criteria employed to judge the present sample were liberal. Two types were employed: modifiers or descriptors in the topic subject limiting the size of patient population and/or the scope of the disease

Table XXXI

Factor VI: Topic Specificity Rankings

TOPIC CATEGORY	Total Studies Reviewed	Number Unacceptable	% Unacceptable	Number Acceptable	% Acceptable	Rank Order	Factor Value
Myocardial Infarction	39	35	90	4	10	17.5	0.3
Pneumonia	34	11	32	23	68	3	2.0
Cholecystectomy	31	25	81	6	19	15	0.6
Appendectomy	28	15	54	13	46	6	1.4
Hysterectomy	25	17	68	8	32	11	1.0
C-Section	21	9	43	12	57	5	1.7
Tonsillectomy & Adenoidectomy	20	18	90	2	10	17.5	0.3
Hip Fracture	20	7	35	13	65	4	2.0
Diabetes	20	15	75	5	25	125	0.8
Prostatectomy	19	18	95	1	5	20	0.2
Breast Lesions	16	10	62.5	6	37.5	7	1.1
Emergency Room	16	2	12.5	14	88.5	1	2.7
Inguinal Hernia	15	14	93	1	7	19	0.2
Gastroenteritis	14	4	29	10	71	2	2.1
Ulcer	14	9	64	5	36	9	1.1
Cataract	14	9	64	5	36	9	1.1
Hypertension	14	11	79	3	21	14	0.6
Delivery	11	7	64	4	36	9	1.1
Cerebrovascular Accident	12	9	75	3	25	125	0.8
Congestive Heart Failure	12	10	83	2	17	16	0.5
Total	395	255	65	140	35		

studied. This was advisable because only a dozen or so of the topics reported on the Form 131 provided what one might expect for a full and complete title; only five contained study objectives. The use of more demanding criteria at this time would have made it impossible to obtain comparisons among the topic categories. More stringent criteria should be employed in the future. Technical assistance may be required to improve reporting requirements and/or to assist in topic definition.

Although the data obtained concerning overall topic specificity, even using this liberal criterion were disappointing, one should note that a non-specific topic does not necessarily mean a poor study. A specific topic assists examiners in understanding the objectives of a study. Non-specificity can be overcome, however, by detailed development of objectives, methods and criteria.

Factor Value Computation

Given the constraints noted above, any specificity modified applied to the sample under consideration should be given less weight than might be desirable. A value ratio of 0.03 was selected and applied to the percentage of studies in each category. The resulting topic specificity factor value is shown in column 7.

5.6 Relative Topic Category Probability of Containing MCEs With Impact

When two MCEs are chosen for evaluation, their relative probability of identifying problem areas is based on the overall relative

ranking of their Topic Categories according to the three criteria above. The Topic Category with the highest ranking is one:

1. Whose scope is largest and whose disease related benefits are well known. This maximizes the random chance of finding removable problem areas at initial audit.

2. Whose random sample of MCEs had the best situation specific rationales for selecting a topic.

3. Whose random sample of MCEs had best focused their topics. Combinations of the three criteria yield an overall ranking of the Topic Category probability of containing MCEs with potential impact.

The final topic category score was generated by adding the factor values described in earlier sections for each of the criteria.

As is seen on Table XXXII on the next page, MCEs in the categories of myocardial infarction, pneumonia, cholecystectomy, appendectomy, breast lesion, hypertension, delivery, CVA, and CHF would have an above average probability of having MCEs with impact.

Table XXXII

SAMPLE VALIDITY RANKING

TOPIC RELATED CATEGORY	Relative Potential Impact Ranking	Situation Specific Ranking	Topic Specificity Ranking	Final Sample Validity Ranking
Myocardial Infarction	8	16	17.5	9
Pneumonia	4.5	14	3	4
Cholecystectomy	3	9	15	3
Appendectomy	1.5	19	6	1
Hysterectomy	10	5	11	10
C-Section	17	3	5	15
Tonsillectomy & Adenoidectomy	15	12.5	17.5	16
Hip Fracture	12.5	12.5	4	12
Diabetes	12.5	8	12.5	13
Prostatectomy	14	17.5	20	14
Breast Lesions	1.5	17.5	7	2
Emergency Room	18	5	1	17
Inguinal Hernia	16	5	19	18
Gastroenteritis	20	1	2	19
Ulcer	11	20	9	11
Cataract	19	15	9	20
Hypertension	4.5	7	14	5
Delivery	9	2	9	8
Cerebrovascular Accident	7	10.5	12.5	7
Congestive Heart Failure	6	10.5	16	6

NOTES

1. Eisele, C. W. - "The Medical Audit is Postgraduate Education" in C. W. Eiseley (ed.) The Medical Staff in the Modern Hospital (New York: McGraw Hill, 1967), p. 398.

2. For an example of a special study which examines long-term outcomes, see Williamson, J. W., M. Alexander, and G. Miller - "Priorities in Patient Care Research and Continuing Medical Education", JAMA 204 (April 22, 1968): 93-98.

3. National Center for Health Statistics, Current Estimates from the Health Interview Survey, U. S. 1975, Series 10, Number 115 (DHEW Publication (HRA) 77-1543), pp. 23-24.

4. Social Security Administration, Office of Research and Statistics, Short-Stay Hospitals under Medicare, 1973: Use and Charges by Major Discharge Diagnosis, 1973.

5. Institute of Medicine, Assessing Quality in Health Care: An Evaluation (Washington, D.C.: National Academy of Sciences, 1976), p. 7.

5.7 Follow-Up Procedures - Implementation of Follow-Up In The MCE Program

The MCE Program truly may have an impact on medical care process and patient outcomes only if problem areas, once identified, are removed by the implementation of PSRO follow-up procedures. In assessing this overall implementation of follow-up, we are again evaluating the potential impact of the MCE Program. Follow-up, including the intervention of recommended actions and the completion of reaudits, are assessed here in two sub-reports.

5.7.1.....Assessment of Total Follow-up in a 10% Random Sample of MCE

5.7.2.....Overall MCE Reaudit Activity in the MCE Program

5.7.1 Assessment of Total Follow-Up Performed in a 10% Random Sample of MCEs

Methods

To access the level and potential impact of follow-up activity being performed in the context of medical care evaluation studies, a random sample of these studies was drawn. This sample included 10% of the MCE studies begun before January 1976 by the first 65 PSROs to reach conditional status. Eighty studies were included in this sample. However, three of these studies were deleted because documentation could not be obtained in time for the analysis.

For the remaining sample base of 77 studies, BQA forms 131 and 133 were collected where available. Information on these forms, "Medical

Care Evaluation Study Abstract" and "Restudy Report," was supplemented by data gathered by a telephone survey of the PSROs involved. Each PSRO was asked detailed questions concerning the follow-up aspects of every study within the sample which was conducted under its jurisdiction.

All available information was collected and aggregated into the four major diagnostic conditions specified by the proposal for the current contract:

- Condition I: Interventions not required
- Condition II: Interventions required, interventions not carried out
- Condition III: Interventions required, interventions carried out, reaudit not performed
- Condition IV: Interventions required, interventions carried out, reaudit performed

Overall Status of Current MCE Follow-Up Activity

Data from the 10% random sample of MCE studies begun before January, 1976 is presented in this section. Statistical analyses of this information have been performed for each of the seven conditions, for some sub-conditions, as well as across all conditions.

The classification characteristics of the sample population are indicated on Table XXXIII.

Table XXXIII

DISTRIBUTION OF AUDITS IN 10% SAMPLE,
BY CLASSIFICATION

Classification	Number	%
A-Medical	36	47
B-Surgical	31	40
C-Administrative	10	13
TOTAL	77	100%

The distribution reflects the overall distribution of 2,876 MCE initial audits studies in the data base at the time of this study.

The overall level and type of follow-up activity being performed in the context of MCE studies is indicated by Table XXXV, on the following page.

Table XXXV

STATUS OF CURRENT MCE FOLLOW-UP ACTIVITY

Condition	Total in Condition	Percent in Condition
I. Interventions not required	26	34
II. Interventions required, interventions not carried out	2	3
III. Interventions required, interventions carried out, re-audit not performed	36	47
IV. Interventions required, interventions carried out, re-audit performed	13	17
TOTAL	77	101%*

*difference due to rounding error

Table XXXV indicates that follow-up interventions assessed and and reported by hospitals are not required in 34% of all MCE studies in this sample. The remaining 66% of the studies identify deficiencies which indicate the need for interventions.

Of the group which requires interventions, recommended actions were carried out in all but two instances or 96% of the time. However, only 13 reaudits were conducted for the group of 51 initial audits identifying deficient practices. In other words, only 25% of those sample audits identifying deficiencies led to a reaudit within the one-year period allotted by PSRO reporting guidelines. Another group

of 7 studies identifying deficiencies reported audits in progress. Thus, 39% of all audits identifying deficient hospital practicess resulted in reaudits completed or in progress.

In two instances recommended interventions were not carried out, and in six other instances recommended interventions were not completely carried out. Finally, two reaudits were performed for audits which did not originally identify deficiencies or recommend corrective follow-up interventions.

Status of Follow-up Implementation, by Condition

1. Condition I: Interventions Not Required

Table XXXVI

MCE AUDITS NOT REQUIRING INTERVENTIONS

Explanation	Number	Percent in Condition
No Deficiency	11	42
Deficiency Justified	15	58
TOTAL	26	100%

As Table XXXVI demonstrates, 26 audits did not recommend interventions. This represents 34% of the studies sampled. Of this group 42% of the audits reviewed hospital care situations in which no deficiency was identified. In the remaining 58% of the audits, the

deficiencies which were identified were considered justified by the individuals responsible for the audit.

2. Condition II: Interventions Required, Interventions Not Carried Out

Only two audits recommended interventions which were not carried out. This was justified in one instance. In the first instance the recommended actions could not be carried out because the two doctors in question both left the hospital. In the second instance it was recommended that a staff meeting be held to address the problem. There is no indication as to why this was not done.

3. Condition III: Interventions Required, Interventions Carried Out, Reaudit Not Performed

The largest number of audits in this sample fall into Condition III. For 47% of the total sample group, interventions were recommended and carried out yet no reaudit was performed. Though reaudit is not strictly required by PSRO guidelines if it is not indicated by the appearance of unjustified deficiencies in health care practices, in most instances where interventions are recommended a reaudit should be performed. Thus, the magnitude of the sample group in Condition III may indicate a weakness in the implementation of the full MCE study cycle.

4. Condition IV: Interventions Required, Interventions Performed, Reaudit Carried Out

Condition IV is the MCE follow-up condition which most convincingly assures improvement in the quality of hospital care.

In this condition required interventions in deficient medical care situations have been made, and the impact of these interventions has been demonstrated by reaudit. Only 17% of the MCE studies in the total sample fall within this condition, although the sample was chosen in such a way that the audits recommending interventions would have the requisite one year period for completing a reaudit.

Reaudits should demonstrate improved quality of care. The actual impact of corrective follow-up interventions on deficiencies in reaudited health care situations is displayed on Table XXXVII.

Table XXXVII

INTERVENTIONS REQUIRED, INTERVENTIONS CARRIED OUT RE-AUDIT PERFORMED, BY OUTCOME

Outcome	Number	%	Classification
All deficiencies eliminated, no new deficiencies found	5	38	A=3 B=1 C=1
All deficiencies eliminated, 1-4 new deficiencies found	6	46	A=4 B=2
Deficiencies reduced but not eliminated, no new deficiencies found	2	15	C=2
TOTAL	13	99*%	

*Difference due to rounding error

5.7.2 Overall MCE Reaudit Activity in the Nation

The above analysis of follow-up procedures was based on a random sampling of MCEs. The following information is a nationwide summary of reaudit information in the PMIS data bank. It is presented for completeness. It appears that although the reaudit is a critical component of the entire MCE study cycle, it has not been implemented at the same rate as the PSROs' concurrent review and initial audit functions. Whereas 2,876 MCE initial audits have been reported as completed by June 1, 1977, only 132 reaudits were reported as completed by this time.[1]

Reaudits usually, though not always, are indicated where a deficiency in health care administration, delivery or patient outcomes is identified by an initial MCE audit. Approximately 69% of all initial audits indicate the necessity of a reaudit. Thus, reaudits are recommended for 43.5% of all initial audits, and 56.5% of all initial audits indicate that no reaudits are necessary. Consequently, of the 2,876 initial audits reported by Quarter 2, 1977, one would expect 1,251 to lead to reaudits and the remaining 1,625 to be complete after termination of the initial audit and/or intervention.

Thus, approximately one reaudit has been completed for every 22 initial MCE audits, and for every three initial MCE audits, one reaudit is planned and may be in process (assuming that all planned reaudits will be carried out). This represents at best a 33.3% rate of reaudit activity, whereas one could expect a rate as high as 69%

1/ The number is greater than 132. PSRO errors in reporting and PMIS delays are such that one PSRO has done 90 reaudits even though only 20 were acceptable for entry into the PMIS data base at the time of this study.

if a reaudit were performed whenever a deficiency was found during an initial MCE audit, or as high as 43.5% if reaudits were only performed for those deficiency-identifying audits which indicate that a reaudit is necessary. Thus, rather than 1,096 reaudits reported planned or completed one would expect between 1,259 and 1,999.

Of the 1,096 reaudits reported as planned or completed, 132 reaudits were reported as complete on status reports (BQA from 135), another 964 reaudits were reported to be planned or in process as of Quarter 2, 1977. There is, however, evidence to suggest that a substantial number of planned reaudits are not being carried out. Telephone interviews were conducted with PSROs on a 20% random sample of reaudits that were planned to have been started by the end of Quarter 1, 1977. Of the 36 planned reaudits in the sample, only 13 reaudits were completed or in process. Of the remaining 23 anticipated reaudits 14 had not been started, three had been discontinued because there was an insufficient number of cases for reaudit, and six had been abandoned for various other reasons. Thus, of the sampled audits which were reportedly to commence in Quarter 1, 1977, only 36% were completed or in process as of the first week of June, 1977.

Similar results were obtained when the same procedure was repeated for reaudits which were reportedly to begin by the end of Quarter 2, 1977. In this 20% sample of a universe of 223 planned reaudits, only 40% of the reaudits were completed or in process. The remainder had not been started.

In summary, these surveys of PSROs which indicated that reaudits had been planned suggest that approximately 62% of such planned reaudits have not begun on schedule. One may therefore infer that the figures of 964 reaudits which were reported planned to be in process by this time may overstate the reality of reaudit activity. If these samples are accepted as representative, it is probable that only approximately 366 of these reported reaudits are being carried out on schedule.

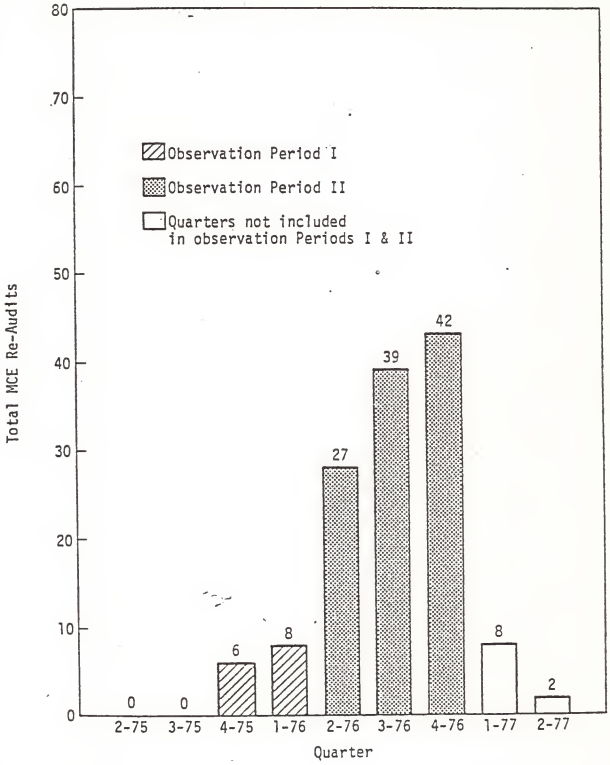
The relatively low level of reaudit activity may be a result of several factors. These factors include the recency with which initial audits were implemented and the resulting lag time for reaudit; administrative issues at the PSRO level; lack of incentives for performing the reaudits; and resistance to medical audit, the educational intervention process, or the PSRO program within the medical profession.

Increase in MCE Reaudit Activity

There is, in spite of these actual or potential problems, a noticeable trend towards growth in the number of completed reaudits on a quarterly basis. As Chart V shows, the first six reaudits were completed in Quarter 4, 1975, and the following four quarters saw the completion of 8, 27, 39 and 42 reaudits, respectively. This increased activity can be attributed both to the increased number of participating PSROs, and increased PSRO productivity, as displayed on Chart IV.

Chart V

MCE Reaudit Activity, by Quarter



Distribution of Completed Reaudits by Classification

The limited universe of completed reaudits reduces the reliability of any inferences drawn from the available data, which is displayed on Table XXXVIII. Consequently, a discussion of the distribution of completed reaudits by classification can only be indicative of general tendencies.

At this point it seems that the distribution of reaudits in the medical classification tends to reflect the distribution of original audits, within somewhat broad limits; 45.2% of original MCE audits addressed topics in Classification A (Medical), as compared with 47.7% of the audits (including the reaudits submitted thus far for Quarters 1 and 2 of 1977).

Classification B (Surgical received 45.6% of initial MCE audit attention as compared with 37.1% of the reaudits. The difference between these levels is too great to be attributed to chance. This 8.5% difference in magnitude suggests that when a PSRO or its hospitals begin to perform reaudits surgical topic categories receive less attention than those in the medical classification. Interestingly, a similar pattern occurred with initial MCE audit activity. Audits of surgical topic categories were initially performed less frequently than those in the medical classification. However, over time the frequency of auditing surgical topic categories increased to a level of parity with that of medical topic categories.

Finally, Classification C, Administrative and Miscellaneous Procedures, was responsible for 9.2% of original MCE audits, and 15.2%

Table XXXVIII

Distribution of Completed MCE Re-Audits by Classification

	Period I		Period II		1977		TOTAL	
Classification	Number of re-audits	Percent of all re-audits in 1975	Number of re-audits	Percent of all re-audits in 1976	Number of re-audits	Percent of all re-audits in 1977	Number of re-audits	Percent of all re-audits
A	8	57.1	49	45.4	6	60.0	63	47.7
B	6	42.9	39	36.1	4	40.0	49	37.1
C	--	--	20	18.5	--	--	20	15.2
TOTAL	14	100%	108	100%	10	100%	132	100%

of the reaudits. The difference between these levels is too great to be attributed to chance.

Thus, on the basis of this limited data one might infer that the frequency distribution of reaudits tends to reflect the frequency distribution of orginal MCE audits within the medical classification and to be less than the frequency distribution of initial audits in the surgical classification. Conversely, the frequency of reaudits is higher than the frequency of initial audits in the administrative and miscellaneous procedures classification.

Rank Ordering of the Most Frequently Reaudited Topic-Related Categories

As indicated on Table XXXIX ulcers and myocardial infarction were the most frequently reaudited MCE topic categories during the period discussed in this report. These two topic categories were investigated 11 and 9 times, respectively. Pneumonia has been reaudited on 6 occasions, appendectomy and hip fracture both have been reaudited 5 times, and there have been 4 reported reaudits of diabetes through the first two quarters of 1977. With the exception of myocardial infarction, the pattern of reaudits varies somewhat from the pattern of topic categories chosen for initial audits (see Table IV - 3.1.7). Ulcers, the first topic-related category in frequency of reaudit, was 15th in frequency of initial audit. Appendectomy, hip fractures and diabetes were ranked 4, 8, and 8 in frequency of initial audit, and 4.5, 4.5 and 6 in frequency of reaudits.

Table XL

Comparative Rank Ordering of the Twenty Most Frequently Reaudit Topic Categories

Topic Category in Descending Order of Frequency	Period I Number of re-audits	Period II Number of re-audits	1, 2, 1977 Number of re-audits
Ulcer		10	1
Myocardial Infarction	2	7	
Pneumonia	1	5	
Appendectomy		5	
Hip Fracture		4	1
Diabetes		1	3
Cerebrovascular Accident	2	1	1
Cholecystectomy	1	3	
Hysterectomy		3	1
Hypertension		3	
Asthma		3	
C-Section	1	2	
Blood-Transfusions and Usage		3	
Emergency Room		3	
Congestive Heart Failure		2	
Hip Replacement		2	
Dilatation and Curettage	1	1	
Laboratories		2	
Patients-Admissions, Discharge, Transfer		2	
Antibiotics		3	
Inguinal Hernia		1	1
Chronic Obtrusive Pulmonary Disease	1	1	
Normal Pregnancy	1	1	
Stapes Surgery	1		
Liver Biopsy			1
Post Operative Infection	1		1
Cataract	1		
Anesthesia	1		
Miscellaneous (1 study per topic)	—	40	—
TOTAL	14	108	10

Conclusions from Chapter 5

The goal of this chapter was to assess the overall impact of the MCE Program. This program can be effective only if:

1) Topic selection practices of PSROs enable the identification of problem areas

2) Follow-up practices of PSROs actually remove these problem areas.

To evaluate the potential of the MCE Program, therefore, this chapter first examines the performance of the MCE Program in selecting MCE topics through a system which rates the commonly chosen topic categories by their relative probability of containing MCEs capable of identifying problem areas. Secondly, to evaluate follow-up, this chapter measures the degree to which PSROs have implemented recommended actions as well as the level of reaudit activity.

Topic Selection

1. The medical diseases which are the chief causes of deaths in this country, except for carcinoma, are the most frequently selected medical topics. Likewise, the most frequently selected surgical topics are the surgical procedures which are most often carried out (except those relating to trauma). By choosing widespread treatable diseases and procedures that pertain to many patients, physicians, and ancillary services, the program has a good chance of revealing problem areas.

2. The actual procedures involved in topic selection appear to be based primarily on the desire of PSROs to choose major acute diseases.

   a) The high ranking (top 10) topic categories which are selected with high frequency (myocardial infarction, appendectomy, cholecystectomy, pneumonia, hysterectomy) are related to acute hospital admissions.

b) The high ranking topic categories which are selected with lower frequency are chronic diseases (hypertension, cerebrovascular accidents, diabetes).

c) The situation specific rationale for selecting topics is frequency or "common admission" in 50% of the cases. PSROs presently seem to have no other generally used rationale for choosing MCE topics.

d) MCE topics are not usually focused on a specific area of their general topic This reduces the ability of the MCE to reveal problem areas. In addition, because the overall topic categories selected are so important, it could be most useful for a hospital to do several MCEs with varying foci in these areas. This can only be done if there is appropriate focusing within topic category.

3. Based on 1 and 2 above, the MCE Program is presently identifying problem areas. However, the PSRO practices in topic selection will have to be refined in the future to permit the continual selection of high impact topics and the implementation of rigorous studies.

Follow-Up

1. Follow-up is required in more than 60% of MCE audits. Our data indicate that almost all of these audits make recommendations for remedial interventions. It appears that most MCEs implement these recommended actions, although documentation of such implementation is spotty.

2. Few MCE reaudits have been completed at this point, however, even though they are necessary. PSROs, therefore, are not getting feedback on efficacy of their recommended actions.

3. Without reaudits, neither the Bureau nor the PSROs can easily evaluate the usefulness of MCEs. (In

fact, data on recommendations in this section are hard to validate as a result.)

4. Because of 1 above and because MCEs have been shown to be a worthwhile working tool in the removal of deficiencies, problem areas, once discovered, are probably being eliminated by the PSRO Program.

Overall, the MCE Program appears to have the potential to have an impact on medical care and patient outcomes. Refinements in the PSRO process of topic selection and the consistent performance of reaudits will ensure that problem areas will continue to be identified and removed.

6. HOW HSQB PLANS TO EVALUATE THE IMPACT OF PSRO RETROSPECTIVE REVIEW ON MEDICAL CARE

The Health Standards and Quality Bureau of the new Health Care Financing Administration, is responsible for further evaluating the effectiveness of the PSRO program in effecting changes in the medical care system. To date, scope of medical care evaluation activity has focused on assessment of the quality of care and the efficiency of care being delivered in acute care facilities. When the assessments, performed by local physicians and other health care practitioners, have revealed deficient patterns of medical care or patient outcomes, local physicians and other health care practitioners have been recommending and following up the results of actions made to remove the deficiencies in care. As the quantity of medical audit activity has increased, BQA and OPEL have been evaluating the effectiveness of this activity. The primary purpose of this chapter is to outline future plans for evluation of the difference made in medical practice and the quality of care by the implementation of MCE activity across the country.

This MCE Evaluation, completed September 20, 1977, analyzed some of the early changes brought about in medical care and patient outcomes by examining a sample of completed MCEs themselves, consisting of medical audit-reaudit combinations performed in the same hospital.

Variations from locally established criteria, defining the expected practices in diagnosing and treating patients, were shown to be identified in each of the initial medical audits. After recommended actions had been implemented in each MCE, examination of the average reaudit revealed that 68% of variations (in medical care practice and expected patient outcomes) were being eliminated. The final evaluation report concluded that MCEs appeared to be making a difference in medical practice and patient outcomes. However, the last chapter of this report also emphasized the limitations of this evaluation which relied on reading MCEs themselves to measure their own impact.

One method of externally assessing the impact of MCEs on changing medical care process (including medical practice) is for the Bureau to design large scale medical audits using explicit medical care process and patient outcomes criteria. The input of National Council and experts in the areas of medicine and administration would be essential. Auditing would be performed on a large sample of patients taken from specifically defined patient populations in institutions not yet under binding PSRO review. The overall rates of variation from each criterion would be calculated. Deficiencies in the way patients are admitted, given routine hospital care, diagnosed, treated, and assigned appropriate levels of care would be noted where the variation rates were deemed inappropriately high. Similar large scale reaudits would then be performed two years after

review had been well established. Statistically significant reduction in variation rates from medical process criteria would be taken as evidence that PSRO retrospective review had made a difference in medical practice. Unchanged variation rates would attest to the fact that the quality of care had not been significantly improved by two years worth of PSRO retrospective review.

Another method of assessing the impact of MCEs would involve directly measuring the quality and efficiency of medical care delivered before and after the introduction of PSRO review into hospitals. Measurable parameters for the quality and efficiency of medical care might include:

a. Number and types of diagnostic tests performed for specified groups of patients.

b. Number and types of therapeutic procedures ordered and reordered for specified groups of patients.

c. Number and types of hospital personnel providing services to specified groups of patients.

d. Patient questionnaire scores on knowledge about their diseases.

e. Measures of physician and other health care practitioner knowledge.

f. Scores of patient satisfaction with their care.

g. Provider admission rates for specified groups of patients.

h. Rates of readmission for specified groups of patients.

The parameters above would be measured in a study and a control group of hospitals at two points in time. The first group would be measured before and two years after review is established. The second group of hospitals, in which no review is underway and in which the prospect for establishing review is unlikely, would be measured (using the above parameters) simultaneously. A comparison between the aggregate improvement in the medical care parameters would be made between the two groups.

A similar methodology might be attempted in assessing the impact of PSRO review on the actual status of patient health. Such an evaluation becomes extremely difficult due to the myriad of factors which influence ultimate patient outcomes. Also, such an evaluation requires extensive time for the implementation of epidemiologic monitors. However, an early attempt could be made to measure the impact on patient health status by assessing changes in one health status indicator for one selected disease.

This pilot inquiry can be readily done on the impact of Myocardial Infarction MCEs on the hospital and disease specific Mortality Ratio. The epidemiologic monitor consists of the PHDDS tapes now being completed which contain information on each discharged Federal patient in a PSRO area. The recorded information includes specific hospital, primary diagnosis, and discharge status (alive or dead) for each patient. Using the interactive Autogroup statistical analysis program, the PHDDS tape can be used to calculate the mortality

rates for several hospitals which are doing MCEs in the topic myocardial infarction. The mortality rates pre-audit and post reaudit, standardized for age and sex, would be combined into a change index for each hospital in this study. A hospital specific change index would also be calculated based on the audit and reaudit variation rates noted from the mortality criterion. Correlation co-efficients will be developed for the two change indexes. A total positive correlation between reduction in MCE variation rates and reduction in mortality rates would be taken as an indication that the MCE process may well effect patient health status. Such a finding would motivate the completion of further large scale epidemiologic studies.

APPENDIX A

FINAL REPORT - VOLUME I

HSA 240-75-0015
Task Order 1, Amendment 1

ASSESSMENT AND PLANNING FOR THE MEDICAL CARE EVALUATION (MCE) STUDY COMPONENT OF THE PSRO REVIEW SYSTEM

January 17, 1977

Submitted To: Department of Health, Education, and Welfare
HSA/BQA
Division of Peer Review
5600 Fishers Lane
Rockville, MD 20852

Submitted By: Kappa Systems, Inc.
1501 Wilson Blvd.
Arlington, VA 22209

TABLE OF CONTENTS

		PAGE
I.	INTRODUCTION	1-1
II.	EXECUTIVE SUMMARY	2-1
	Phase I	2-2
	Phase II	2-3
	Phase III	2-5
	MCE Reporting System - Proposed Revisions, Sampling, and Analysis	2-6
	Evaluation Program	2-7
	Recommendations	2-8
III.	SUMMARY OF CONTRACT ACTIVITY PRIOR TO NOVEMBER 15, 1976, Phases I and II	3-1
	Phase I	3-1
	Summary of Activity	3-1
	Major Conclusions	3-2
	Recommendations	3-3
	Subsequent Activity Related to Phase I	3-4
	Phase II	3-5
	Summary of Activity	3-5
	Major Conclusions	3-5
IV.	DESCRIPTION OF AND RATIONALE FOR PHASE III ACTIVITY	4-1

V. ROUTINE MCE STUDY ANALYSIS 5-1

Introduction 5-1
MCE Reporting System - Proposed Revisions 5-2
Possible Sampling Procedures - Theoretical Considerations 5-4
Recommended Sampling Procedure 5-9
Summary 5-11

VI. ROUTINE MCE STUDY ANALYSIS ASSESSMENT OF THE MCE STUDY PROCESS AND ITS INITIAL IMPACT ON HEALTH CARE PROCESSES 6-1

Introduction 6-1
First Level Analysis of Sample MCE Studies - Rating of MCE Studies on Critical Elements 6-2
First Level Analysis of Sample MCE Studies - Analysis of Rated Studies 6-7
Second Level Analysis of Sample MCE Studies 6-15

VII. SPECIAL MCE STUDY EVALUATION PROGRAM 7-1

VIII. COST ANALYSIS 8-1

IX. ASSESSMENT OF PHASE III CONTRACT ACTIVITY AND MAJOR RECOMMENDATIONS 9-1

X. SUMMARY STATEMENT 10-1

SECTION VI

ROUTINE MCE STUDY ANALYSIS ASSESSMENT OF THE MCE STUDY PROCESS AND ITS INITIAL IMPACT ON HEALTH CARE PROCESSES

A. Introduction

In Section V, a procedure for establishing a modified reporting system for MCE studies and a procedure for sampling based on the reporting system in order to establish a data base for further analysis was described in some detail. Based on the assumption that BQA will be able to obtain from the PSROs the completed study reports (BQA 131) for those studies selected as part of the sample, the next issue which must be addressed is what is to be done to review and to assess the sample reports which BQA will receive.

This section will show purposes for routine assessment of the MCE study process and outcome, the factors which influence the performance of MCE studies, and how these issues can be dealt with by basic type of review and analysis.

As noted previously, the MCE study is the quality assurance component of the PSRO program. As such, it is vital that BQA be able to determine the quality of the process and the benefits of its outcomes. KSI is recommending that for routine purposes, a two level system of analysis be insituted to assess the MCE process and a one level system to assess initial impact of the MCE study process. The long term impacts, both potential and actual will be dealt with in a later section of this report.

Under a two level system of process analysis, the sample of MCE studies will be reviewed at two levels of depth and a determination will be made of the adequacy of each study reviewed at either level. Judgements about adequacy will be based on a weighted system of critical components which together constitute the total MCE process. Based on further analysis of those studies rated adequate or inadequate further decisions can be made about the variables affecting the implementation of a valid MCE study and both areas where technical assistance is needed and areas where changes in the MCE regulations are needed can be identified.

B. First Level Analysis of Sample MCE Studies - Rating of MCE Studies on Critical Elements

The first level analysis of the sample of MCE studies consists of two parts. The first is a rating of "adequate" or "inadequate" given to each of the studies sampled and based on a weighting of elements felt to be essential to the implementation of a successful MCE study. The second part of the analysis consists of comparisons and determinations made about the factors which affect the completion of a successful or a non-successful MCE study.

The quality of any MCE study is a Function of the following critical elements of the study process: reasons for topic selection, development of criteria and standards, determination of actual performance, comparison of actual performance to standards, attribution of deficiencies, and presence of plans for correcting deficiencies if they are found to exist. If a certain number types of these elements are absent or for some reason unacceptable, the MCE study should be judged inadequate. The basis for weighting the elements will be discussed later in this section. The following section describes how the characteristics upon which a judgment of acceptability of each of the six study elements is made.

1. Reasons for Topic Selection: There are three primary reasons for selecting a topic for study. To begin with, the condition, procedure, or administrative practice should occur relatively frequently. If topics of infrequent occurrence are chosen, there will be lessened opportunity for the study to significantly influence the quality of the health care process. In the second place, the probable relationship of the topic to the patient's health should be known. If there is no general agreement on the potential effectiveness, or benefit of the topic selected, the study has a high probability of being non-productive. Finally, the condition, procedure, or administrative practice under consideration should be of high cost. Examination of costly activities can indirectly influence the quality of care through the reallocation of resources.

Although analysis of these three reasons for selecting a study topic is highly judgmental, the topic selection has such a substantial impact on the overall quality of the study, that a judgment should be made. A determination should be made of the reason for which the study was conducted. If it is apparent that the prevalence, cost, or probable effect on the health of the patient of the procedure or practice was a reason for conducting the study, then this characteristic should receive an acceptable rating.

2. Development of Criteria and Standards: The content of criteria and standards is so variable that basing an assessment of the quality of the study on this characteristic would be very difficult. However, the presence of written criteria and standards to be compared with actual performance is fundamental to the implementation of the study. Consequently, an MCE study should not be considered adequate unless a written list of criteria and standards is submitted as part of the study report.

3. Determination of Actual Performance: This element of the study is composed of several activities. First, some indication must be given of the number of patients included in the study and the procedure by which they were chosen from among all similar patients. The critical factor is that the sample selected should be reasonably representative of all patients with the condition. Second, some data collection instrument must have been used which abstracted information corresponding to the written list of criteria and standards. Otherwise, it is difficult to imagine how appropriate comparisons can be made between standards and actual performance. In summary, then, some indication that the sample of patients or records are representative and a copy of the data collection form are necessary to assess whether the determination of actual performance of the study is acceptable.

4. Comparison of Actual Performance to Standards: Although this comparison has not been produced in written form in the past, it is a key characteristic of the study. To state that deviations do or do not exist is not specific enough to permit judgement of the quality of this characteristic. There can be substantially different implications, for instance, if deviations occur primarily among patient outcome standards rather than process standards. Consequently, a written measure of performance must appear for each written standard.

5. Attribution of Deficiencies: Although it is often difficult to establish an explicit institution, individual, or administrative practice responsible for each deficiency, it is necessary to attribute the problem before corrective action can be planned and pursued. A list attributing deviations to someone, some group, or some institution is necessary if this study element is to be judged acceptable.

6. Presentation of Plans for Correcting Deficiencies: Finally, some action must be taken to correct any deficiencies found. Again, while it is difficult to determine the content of the actions, it is necessary to determine whether they are appropriate to the previously listed attributions. For example, an educational program directed at physicians is probably an inappropriate action for a deficiency traced to hospital administration. Therefore, to judge this element, it is necessary to have a written list of recommended actions which is compatable with attributions.

Table 5 consists of the necessary components, or the standards for judgment, for each of the six elements of an adequate MCE study. If any of these elements are not judged acceptable, the study is judged to be inadequate.

Table 5. Elements of the MCE Study Process and Standards for Judging Their Acceptability

1. Reasons for Topic Selection

   Standard - High prevalence
   - Known probable effect on patient's health
   - High cost

2. Development of Criteria and Standards

   Standard - Written list of criteria and standards

3. Determination of Actual Performance

   Standard - Sampling procedure which insures representativeness
   - Copy of data collection instrument

4. Comparison of Actual Performance to Standards

   Standard - Written performance measures for each standard

5. Attribution of Deficiencies

   Standard - Written list of "responsible" organizations, institutions, or individuals (generic)

6. Presentation of Plans for Correcting Deficiencies

   Standard - Written list of recommended actions compatable with attributions.

As noted before, KSI recommends that a weighted scoring system be used to determine the adequacy of a study. The reason for the use of such a system is that all six of the study elements described above do not contribute equally to the success of the study process. For instance, experience and professional jusgment would indicate that the reason for topic selection, and even more so the development of criteria and standards, will effect the study process to a greater extent than the sampling procedure. KSI suggests that each study be rated in the following manner.

- A possible 100 points is to be allowed for each study.
- The six elements, if judged acceptable according to the standards indicated previously, would receive the following point values:

1. Reasons for topic selection	20 points
2. Development of criteria and standards	30 points
3. Determination of actual performance	10 points
4. Comparison of actual performance to standards	10 points
5. Attribution of deficiencies	10 points
6. Presentation of plans for correcting deficiencies	20 points
	100 points

- Any element judged not acceptable would receive no points

- To be given a final rating of "adequate" a study would have to receive at least 70 points. This allows for some deviation from what might be considered a "perfect" study process. However, as time goes by, and experience with performing MCEs is gained, this minimum standard might be raised.
- A rating of "undetermined" should be given any study in the sample which cannot be scored on the above basis.

In summary, for the first level analysis of sample MCE studies, six elements of the MCE process considered to be critical to the completion of an adequate study have been described. Standards for judging whether or not each element has been performed in an acceptable way were suggested. Finally, a weighted rating system was suggested for the scoring of each study considered. Once each of the MCE studies in the sample drawn is given a rating, more detailed analyses can be performed.

APPENDIX B

AN IMMEDIATE EVALUATION
OF
MEDICAL CARE EVALUATION STUDIES

Development and Specification of the Method of Application of An Impact Rating System for MCE Studies

August 18, 1977

Submitted to:

Division of Peer Review
Office of Health Standards and Quality
Health Care Financing Administration

Submitted by:

Kappa Systems, Inc.
1501 Wilson Boulevard
Arlington, Virginia 22209

Contract Number 240-77-0074

TABLE OF CONTENTS

		Page
I.	INTRODUCTION	1
II.	OVERALL SYSTEM CHARACTERISTICS	3
III.	ANALYSIS OF INDIVIDUAL FACTORS	6
	A. Assessment of Process Factors	6
	B. Percentage of Documented Deficiencies Removed by Time of Restudy	7
	C. Percentage of Recommended Actions Implemented by Time of Restudy	9
	D. Percentage of New Deficiencies Highlighted by Restudy	10
	E. Differential Potential Impact of the Removal of Deficiencies	11
IV.	SCORING AND RANKING OF STUDIES	13
V.	SUMMARY	16
	FIGURE 1	17
	FIGURE 2	18
	FIGURE 3	19
	FIGURE 4	20

DEVELOPMENT AND SPECIFICATION OF THE METHOD OF APPLICATION OF AN IMPACT RATING SYSTEM FOR MCE STUDIES

I. INTRODUCTION

The requirements of Contract 240-77-0074, An Immediate Evaluation of Medical Care Evaluation Studies, call for the development and specification of the method of application of an Impact Rating System for MCE Studies. To determine the actual or potential impact of MCE study outcomes on medical care practices, it is necessary to first determine whether the hospitals are doing what they are supposed to be doing, i.e. performing MCE's in an acceptable manner. Then it is necessary to determine what if any short and long term affects result from the implementation of MCEs by the hospital.

As a first step in making these assessments, a system is needed to judge or assign a score both to the adequacy of the hospitals' MCE study process and the short term outcomes (immediate impact) of the studies conducted. This grade should differentially indicate both how well the studies were performed and the potential for their immediate impact upon health care practices. To do this the system should permit identification and assessment of the numbers and types of deficiencies identified, the number, types and percentages of actions recommended and carried out, and finally the numbers, types and percentages of deficiencies corrected.

The sections that follow describe and illustrate the Impact Rating System for MCE Studies, as developed by Kappa Systems, Inc., including the overall system characteristics, analysis of its composite individual factors, scoring and ranking of studies, and summary.

II. OVERALL SYSTEM CHARACTERISTICS

Five factors were listed in the original contract proposal for consideration in developing a rating system for individual MCE studies. These were:

- An assessment of satisfactory completion of the elements of the MCE study process (as developed under Task I of Contract HSA-240-75-0015).
- The percentage of documented deficiencies removed by time of restudy.
- The percentage of recommended actions implemented by time of restudy.
- The percentage of new deficiencies highlighted by restudy.
- The differential potential impact of given recommendations.

A rating system has been devised as described below which incorporates the first three of these factors as they were originally conceived. The fourth factor (new deficiencies) was deleted after further consideration because it was decided that inclusion would be likely to distort the final rating's main objective of measuring correction. This would occur as there is no current means of evaluating the degree to which new deficiencies would be corrected or the degree to which new deficiencies were more or less important than the previously identified deficiencies. In addition, thorough action by audit committees in

identifying new deficiencies might be discouraged if such action were assigned a negative value.

The fifth factor has been included in the rating system in a slightly modified form. This factor is now the differential potential impact of corrected deficiencies rather than of implemented recommendations. This factor value can be used to make comparisons among hospitals in the study sample regarding improvement of health care within the topic category. Kappa Systems, Incorporated does not yet have sufficient data to apply this value in any but a tentative sense to impact beyond the study sample to the national scene. To validly attribute impact on a national basis, data such as hospital admission rates and community size would be needed. This data could be obtained if sufficient time was available and if the PSROs could be encouraged to provide coded lists of their hospital discharge rates. It is important to note, however, that this system was applied for the purposes of this contract to five MCE topic-related categories all of which already have been determined to have substantial potential impact in terms of cost of the problems, the extent of provider and patient populations involved and preventable morbidity and mortality.

In weighting the four factors ultimately utilized in the rating system it was decided to give equal weight to each: process; actions taken; deficiencies removed; and weighted value of deficiencies removed. In essence this provides twice as much emphasis for deficiencies removed than each of the other two factors. A system for combining these values for each complete MCE study analyzed has been established on the basis of a potential maximum of 40 points. Twenty-nine and one half points was established as the threshold of acceptability of an individual study, based on the decision to accept varying

percents of scores as threshold for the values contributing to the final score (70% of process, 75% of actions taken and 75% of deficiencies corrected).

III. ANALYSIS OF INDIVIDUAL FACTORS

A. Assessment of Process Factors

An assessment instrument for the first level analysis of MCE process factors was designed as shown in Figure 1.(page 17). This is based on the system for first level rating of critical MCE elements developed by Kappa Systems, Incorporated under Task I of HSA Contract 240-75-0015.

The criteria are designed to be judged independently of one another for each study, and given a maximum value of one point each. In two instances, topic selection and specification of study design, two criteria are listed for a single unit value. For topic selection, "high impact category" (i.e. rating within the first ten high impact topic related categories) and "situation specific" are posed as alternate criteria. Satisfaction of either earns the full point value. Topic specificity is given an additional point value rather than contributing to the topic selection score point value as was suggested in the previous deliverable, Development and Application of a System to Assess the Validity of the Selection of Topics of MCE Study, July 14, 1977. It is felt that the original method is preferable, but the level of topic specificity among the MCE studies reviewed was so low that too many studies would lose credits if it counted as part of topic selection at this point in time. In the case of study design, although adequacy of data display was noted, satisfaction of sampling procedure requirements was judged to be sufficient to obtain the full unit value credit.

Half points may be awarded when the analyst feels the criteria are partially, but not fully met. Similarly, when criteria are met either in the audit or reaudit study, but not in both, half points may be assigned as long as no more than one point is given for each criterion.

Provision is made to note whether all criteria were used in the restudy or only a subset of the original audit criteria. This is for information only and does not enter into the point value.

B. Percentage of Documented Deficiencies Removed by Time of Restudy

A recording instrument, the Audit and Reaudit Analysis Record, was designed to record deficiencies removed by the time of restudy as shown in Figure 2 (page 18). It was felt that recording such a summation is essentail as it provides easy reference data for later analysis of the factors which lead to high and low ratings for individual studies or groups of studies and for the assessment of cumulative impact of similar deficiencies across studies in a sample.

Five sub-factors were selected to be recorded for each deficiency as a basis for judgment regarding removal or non-removal of that deficiency.

a. Compliance standard selected by the PSRO for that criterion (column 3)

b. Percentage of charts reviewed which met the criterion, without variation, in the original audit (column 4)

c. Number of charts compared with the sample base (presented as a fraction) which were judged "not justified" as variations in the original audit (column 5)

d. Percentage of charts reviewed which met the criteria, without variation, in the reaudit (column 7)

e. Number of charts compared with the sample base (presented as a fraction) which were judged "not justified" as variations in the re-audit (column 8)

A decision is then made, on the basis of analysis of these five factors, as to whether or not individual deficiencies have been corrected by the time of reaudit. The decision is recorded in column 9.

The following criteria are to be used as the basis for this decision:

> The deficiency is considered removed if the unjustified variation or non-compliance has been reduced to less than ten percent of the study sample and/or diminished by at least one half the unjustified variation percentage determined in the original audit. For example, reduction of a percentage from forty percent to nineteen percent, or fifty-two percent improvement (leaving only eighty-one percent compliance with the standard but still representing more than a fifty percent improvement) would be considered acceptable. Reduction of the unjustified variation from forty percent to twenty-one percent would not be acceptable as it represents only forty-seven and one half percent improvement and more than ten percent non-compliance remains. A reduction in unjustified variation or non-compliance from fifteen percent to nine percent would be acceptable because less than ten percent non-compliance reamins although fifty percent of the variation was not removed.

C. Percentage of Recommended Actions Implemented by Time of Restudy

Provision is also made on Figure 2 to record actions recommended to correct each deficiency and to record whether there is evidence in the audit report to show that action had been taken by the time of restudy. Initially, a procedure was employed to note each corrective action recommended (sometimes more than one per deficiency) and to grade the MCE on whether or not there was documentation that the action had been taken. Two problems arose. The first was the some relatively minor deficiencies were addressed by several recommended actions while major deficiencies might be handled by only one. Also the potential impact of a recommended action might vary from hospital to hospital. Initially, an attempt was made to classify corrective action recommendations into major and minor actions. The project staff were unable to arrive at a consensus, however, concerning realistic criteria to base such a classification, particularly in view of the paucity of hard data regarding implementation of recommendations. Therefore, it was decided not to assign differential impact potentials to action recommendations at this time. Such assignment would be desirable, however, and should be considered for later use in a more refined scoring system. Therefore, it was decided that only one recommended action is necessary and completion of one such action per deficiency is given full score. If, however, no action is recommended to correct a deficiency, this is regarded as an omission and a negative impact is assigned. This is done by calculating the percentage of recommended actions implemented as a fraction using the number of such actions (one per deficiency) as the numerator and the total number of deficiencies identified as the denominator.

The second problem encountered was that documentation regarding the completion of recommended action was not usually available in the audit notes. However in many cases, judging from the removal of deficiencies by time of

restudy, it was apparent that some action had been taken, though not recorded. A decision was reached that the need to document the implementation of action in restudy notes had apparently not been a clear requirement at the time the MCE studies in the sample were performed. Therefore, liberal scoring standards were employed for this sample. Where the intent to take action is clearly listed in the original audit notes it is assumed to have been taken, in the absence of clear evidence to the contrary. It is suggested that the hospitals be encouraged to document implementation of recommended actions and to submit this documentation when submitting a full study.

D. Percentage of New Deficiencies Highlighted by Restudy

Provision was made initially to record new deficiencies on Figure 2. Several variations for scoring such new deficiencies were considered.

- Positive score for a new deficiency found in an area where compliance had been acceptable previously (indicating additional value from a thorough reaudit)
- Negative score for an additional deficiency in an area where compliance had not been acceptable (indicating the recommended action had not been effective)
- Negative score for a large number of new deficiencies (in proportion to the number found in the original study) indicating the first study had not been thorough, or carefully done, or an inappropriate data base had been employed, or significant change had occurred between audits in the composition of medical staff or in the way health care was delivered

After a thorough discussion among project staff and the project officer, the conclusion was reached that the new deficiency factor should be

deleted from the rating system for the present time. Thus, the decision was reached on the basis of the following considerations:

- The major objective of this portion of the contract is to assess the impact of the follow-up action of the MCE process. There is no way to judge what corrective action would result from identification of new deficiencies until another restudy was performed. Introduction of a value for these new deficiencies without analyzing the potential they have to correct deficiencies would distort the study score.

- The inclusion of a scoring factor which could penalize PSROs and hospitals for identifying new deficiencies might discourage the search for such deficiencies for later correction. Such a search is, of course, one of the main objective of the MCE process at any stage of an audit or reaudit.

E. Differential Potential Impact of the Removal of Deficiencies

As explained in Section II of this report, this factor was changed from a consideration of the impact of recommendations to that of the differential impact of the removal of deficiencies.

Various scales for rating the relative importance of deficiencies might be chosen. Several, ranging up to a weighting range of five units, were considered. In view of the uneven nature of the data available from the MCE studies in the current sample, it was decided, for the present, to use only a basic system of classifying deficiencies into major and minor categories. A more refined system should be employed for future analyses when collection of more standardized data can be specified.

For the present analysis, deficiencies were classified as major if they:

- specifically and directly affected patient health

- though otherwise minor, were so great in degree of variance from the standard (more than fifty percent) that in the aggregate they became a major deficiency for that hospital.

Deficiencies were classified as minor if they were quite clearly attributable to failure in hospital record keeping rather than a failure in the clinical aspects medical process.

The classification of each deficiency was noted on the Audit and Restudy Analysis Record (Figure 2, column 6, page 18), and the different correction values (two units for major and one for minor) were used in the later scoring computation as described.

IV. SCORING AND RANKING OF STUDIES

For the scoring of MCE studies within a given topic related category, a weighting system was selected apportioning one quarter total value to the MCE process factor (maximum ten points); one quarter value to the implementation of recommended actions, (maximum ten points); one half value to the correction of documented deficiencies by the time of restudy (maximum twenty points).

The reasoning behind this apportionment of weight was as follows:

- Careful and methodical construction and implementation of the study process is essential to obtaining valid results. The topic must be selected and defined with care to investigate important current problems at the hospital, realistic objectives must be identified, a representative sampling system must be chosen, each case must be investigated thoroughly and objectively to judge the appropriateness of care delivered, the results must be recorded meticulously, deficiencies identified and clear action recommendations should be listed in order to provide both a basis of judgement as to the effectiveness of current care and follow-up actions to correct deficiencies which are found. Without a carefully executed initial audit to focus attention on need for future action, deficiencies can be overlooked and it may be difficult to determine appropriate actions. Therefore, project staff felt that an important weight must be given to the initial study process. Ten points were selected.

- The second element in the grading system, degree to which recommended actions were taken, is an obvious element in the follow-up process. Project staff felt that implementation of recommended actions should be automatic in almost

every case. Nevertheless, it was felt that credit should be given for methodical implementation of these actions. On this basis, a second ten points was apportioned to this action follow-up category, making it equal to the process elements section. Documentation of implementation of actions was rarely available, so for the sample to which this system was applied it was assumed that actions had been taken and ten points were given for every study. This automatic award of ten points may prove to be excessive, at least until more data is available including more precise documentation as to which actions were actually taken, which in turn allow a categorization into major and minor actions.

- Project staff felt that greatest weight must be given to the correction of deficiencies. Twenty points, equal to the sum of the two other categories, were reserved for this element. Two considerations apply to deficiencies: the absolute number, or proportion of those corrected, and the relative importance of those corrected. Ten points were given to each. We feel this is appropriate at this stage of development of the impact rating system when the scoring applies to the impact of the restudy process on medical care within a given hospital. At a later time when more completed studies are available as a study base and more data per study is available, such as hospital bed size, discharge numbers and number of cases of a given disease, the scoring system may be applied to estimate impact of a study on given communities and eventually on a national basis. At that time, KSI recommends a higher point value (and therefore higher impact differential) for the last item scored – the relative importance (major or minor) of the deficiencies corrected.

The mechanical procedure for computing the impact grade is as follows:

- The grade for the first element is computed on the First Level Analysis sheet (Figure 1, page 17) and the total (ranging from 0 to 10 units) transferred directly to the MCE Second Level Analysis sheet (Figure 3, page 19).

- The grade for the second element (percentage recommended action implemented) is arrived at by a straight forward conversion of percentage of actions implemented to a scale of 0 to 10. This is done by multiplying that percentage by a 0.1 conversion factor. It is then entered on Figure 3, (page 19).

- Computation of the value for correction of documented deficiencies is slightly more complicated in that it combines the percentage of deficiencies corrected with a separate computation for the weighted percentage of deficiencies corrected. This is shown on the Second Level Analysis Worksheet (Figure 4, page 20). Percentage of deficiencies corrected is a straight forward ratio of the number of deficiencies corrected compared to the total number identified in the original audit. The weighted value of deficiencies corrected is obtained by assigning a value of two points each to major deficiencies and one point each to minor ones. The value of the deficiencies corrected is totaled and taken as a percentage of the total potential value of all deficiencies which were identified. The two percentages are then averaged to obtain an average deficiency correction value. In order to arrive at the correct weight for this third element of twice the value of the other two, a conversion factor of 0.2 is used, providing a point range of 0-20. The value is entered on the MCE Second Level Analysis sheet, (Figure 3, page 19).

V. SUMMARY

An impact rating system has been developed to provide a mechanism for reviewing completed MCE studies in order to determine the combined adequacy of the study process and the potential impact of the study results. Both the development and method of application of the rating system were described. This system will be applied to approximately fifty studies selected from those available for five topic related categories (myocardial infarction, pneumonia, cholecystectomy, appendectomy and ulcer) so that statements can be made about the quality of MCE study process going on nationally and about the potential impact which the changes relating to medical care process, which were observed in the sample, can have on patient outcomes.

APPENDIX C

Study Characteristics

1. Topic Related Category

2. Audit Title

3. Re-audit Title

4. Appropriate Topic Specificity

5. Method for Selecting Study

___ Profile Analysis
___ Concurrent Review
___ Other MCE Study
___ Analysis of Medical Records
___ Perceived Need
___ Other (Specify)

6. Topic Characteristics

___ Incidence/Prevalence
___ Preventable Morbidity/Mortality
___ Cost of Care
___ Other (Specify)

7. Reasons for Topic Selection

___ High Potential Impact
___ Situation Specific Factors

8. Person Hours Utilized

AUDIT			RE-AUDIT		
type: physician other (specify)	no. of persons:	total num. of person hours	type: physician other (specify)	no. of persons:	total num. of person hours

9. Locus of Hospital Study Responsibility

___ Medical Audit Committee
___ UR Committee
___ Service/Dept. (Specify)

___ Other (Specify)

10. Derivation of Criteria

___ Self Generated
___ National Organization
___ Other PSRO(S)
___ Other Hospitals(s)
___ Other (Specify)

11. Written List of Criteria

12. Number of Criteria Elements

13. All/Subset criteria used for re-audit

14. Written List of Standards

15. Study Site

___ PSRO-Wide
___ PSRO SUB-AREA (No. Hospitals)
___ Individual Hospital
___ Service/Dept. of Hosp. (Specify)

___ Other (Specify)

16. Specification of Study Design

___ Sampling procedure to ensure representativeness

Data Collection Instrument:

___ Special Form
___ JCAH/PEP

___ CMA
___ Routine Hospital Form
___ Other

17. Type of Data Collection

___ Retrospective
___ Concurrent
___ Mixed

18. Data Display

19. Written Tally Percentage Comparing Actual Performance to Standards

	AUDIT			RE-AUDIT		
20.	Study	Sample	Population	Study	Sample	Population
	Age:			Age:		
	Sex:			Sex:		
	Size:			Size:		

21. Time Period for Sample Selection

Audit:
Re-audit:

22. Number of Physicians Audited: Audit: Re-audit:

23. Other Sampling Characteristics

24. Person hours utilized: Physician

Other

25. Available information Sources

MCE STUDY IMPACT GRADE

Process Grade (1st level rating)	Impact Grade (2nd level rating)	Acceptability (+,-)

CMS LIBRARY
3 8095 00014797 1